

tional Bureau of Standards  
Library, N.W. Bldg

APR 7 1961

Reference book not to be  
taken from the library.

PART B

SOLAR - GEOPHYSICAL DATA

ISSUED  
MARCH 1961

U. S. DEPARTMENT OF COMMERCE  
NATIONAL BUREAU OF STANDARDS  
CENTRAL RADIO PROPAGATION LABORATORY  
BOULDER, COLORADO



## SOLAR - GEOPHYSICAL DATA

### CONTENTS

#### I DAILY SOLAR INDICES

- (a) Relative Sunspot Numbers and 2800 Mc Solar Flux  
January - February 1961
- (b) Graph of Sunspot Cycle
- (c) Final Zürich Relative Sunspot Numbers - 1960

#### II SOLAR CENTERS OF ACTIVITY

- (a) Calcium Plage and Sunspot Regions - February 1961
- (b) Final Coronal Line Emission Indices - October 1960
- (c) Final Coronal Line Emission Indices - November 1960
- (d) Final Coronal Line Emission Indices - December 1960
- (e) Provisional Coronal Line Emission Indices - February 1961

#### III SOLAR FLARES

- (a-b) Optical Observations - February 1961
- (c) Flare Patrol Observations - February 1961
- (d) Subflares - January 1961
- (e-h) Optical Observations - November 1960, Addenda to  
October 1960
- (i) Flare Patrol Observations - November 1960
- (j) Ionospheric Effects (SWF-SEA-SCNA-Bursts) January 1961

#### IV SOLAR RADIO WAVES

- (a) 2800 Mc - Outstanding Occurrences (Ottawa) February 1961
- (b) 108 Mc - Outstanding Occurrences (Boulder) February 1961
- (c-g) 25-580, 2100-3900 Mc - Spectrum Observations (Ft. Davis)  
July - September 1960
- (h-l) 9.1 Cm Spectroheliograms Stanford - June 1960

#### V COSMIC RAY INDICES

- (a) Climax Neutron Monitor - January 1961
- (b) Deep River Neutron Monitor - January 1961

#### VI GEOMAGNETIC ACTIVITY INDICES

- (a) C, K<sub>p</sub>, Ap and Selected Quiet and Disturbed Days, January  
1961
- (b) Chart of K<sub>p</sub> by Solar Rotations - 1961

#### VII RADIO PROPAGATION QUALITY INDICES

- (a) CRPL Quality Figures and Forecasts - North Atlantic and  
North Pacific - January 1961
- (b) Graphs Comparing Forecast and Observed Quality - North  
Atlantic and North Pacific - January 1961
- (c-d) Graphs of Useful Frequency Ranges - January 1961

#### VIII ALERT PERIODS AND SPECIAL WORLD INTERVALS

- (a) Alerts and SWI - February 1961

The descriptive text was published separately, November 1960.

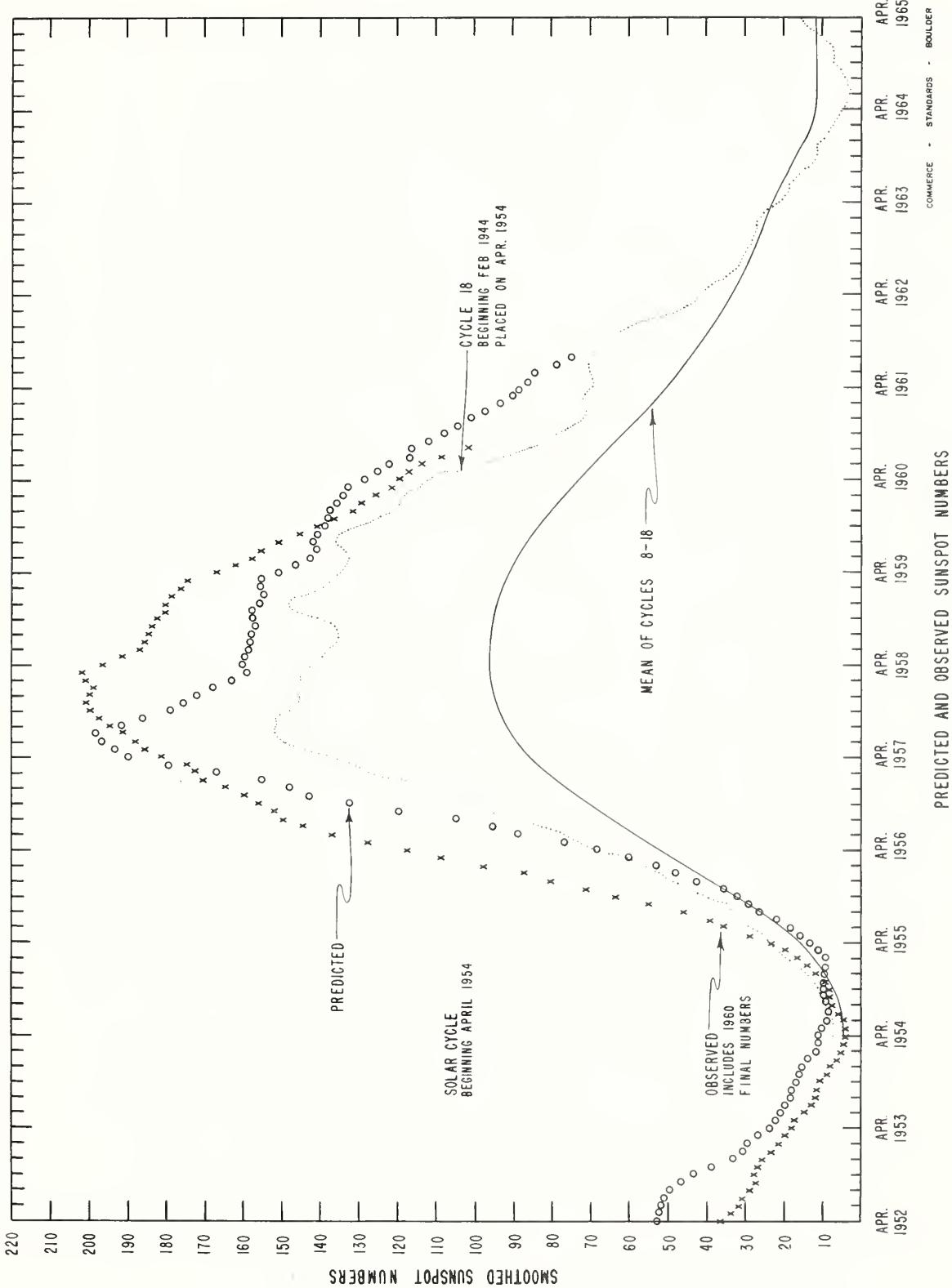
CORRECTION TO TEXT ISSUED NOVEMBER 1960

Please replace second paragraph, page 6, with the following:

The flare position reports from Hawaii have been corrected from July 1, 1957 to December 10, 1960. Flare coordinates reported since December 10, 1960 have been computed correctly. The measured and corrected areas for flares from Hawaii as published for July 1957 through November 1959 should be divided by two to make the entries correct.

Jan. 1961	American Relative Sunspot Numbers $R_A'$
1	116
2	109
3	108
4	82
5	69
6	57
7	55
8	45
9	39
10	32
11	33
12	19
13	14
14	17
15	24
16	30
17	44
18	44
19	44
20	38
21	38
22	34
23	19
24	15
25	22
26	26
27	36
28	63
29	58
30	52
31	53
Mean:	46.3

Feb. 1961	Zürich Provisional Relative Sunspot Numbers $R_Z$	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	55	123
2	57	122
3	59	118
4	75	118
5	61	118
6	56	121
7	52	114
8	55	111
9	68	108
10	61	104
11	41	101
12	28	98
13	26	97
14	26	97
15	27	98
16	17	96
17	38	96
18	30	96
19	20	96
20	22	99
21	42	100
22	46	102
23	41	103
24	56	104
25	50	106
26	49	101
27	42	103
28	17	103
Mean:	43.5	105.5



## ZURICH FINAL RELATIVE SUNSPOT NUMBERS

1960

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	136	173	63	154	97	100	167	75	103	22	76	74
2	141	181	57	143	97	90	157	58	105	34	79	92
3	148	177	62	152	102	109	163	36	80	22	69	101
4	160	156	66	162	96	113	203	30	75	53	67	111
5	168	149	74	156	87	104	168	25	83	70	77	102
6	174	145	79	143	93	109	139	24	100	92	90	104
7	179	123	108	123	125	123	133	56	110	113	116	94
8	171	116	111	112	135	113	134	58	121	110	132	99
9	158	143	109	98	142	129	123	76	138	128	127	97
10	139	143	109	103	149	147	108	94	147	140	137	103
11	143	128	82	114	147	149	95	156	145	133	134	102
12	123	116	68	139	127	151	83	201	147	116	116	101
13	108	106	85	132	135	131	84	235	160	123	122	92
14	118	104	76	149	110	138	89	236	161	106	132	101
15	121	94	84	156	91	144	105	252	151	98	133	108
16	119	84	98	152	101	138	132	244	128	98	121	103
17	117	73	86	124	114	105	136	253	122	103	103	92
18	103	60	85	116	106	91	140	257	153	98	93	82
19	87	44	95	121	108	84	141	228	166	96	83	70
20	94	49	97	116	115	60	137	204	171	92	82	71
21	108	56	115	123	109	56	139	177	177	82	72	63
22	134	64	128	108	118	50	135	168	189	60	66	44
23	138	68	145	106	125	58	127	130	168	54	59	35
24	136	74	123	102	147	68	105	113	157	49	52	37
25	152	89	128	95	148	80	110	131	141	62	42	57
26	209	96	133	96	124	99	92	140	114	72	60	48
27	203	92	138	82	148	116	90	109	97	67	58	70
28	199	87	139	91	142	140	80	98	89	52	57	86
29	193	83	142	92	138	147	94	97	74	72	64	94
30	178		151	100	121	165	82	96	44	82	69	103
31	178		132		111		83	100		68		118
Mean	146.3	106.0	102.2	122.0	119.6	110.2	121.7	134.1	127.2	82.8	89.6	85.6

COMMERCE - STANDARDS - BOULDER

## CALCIUM PLAGUE AND SUNSPOT REGIONS

IIa

FEBRUARY 1961

CMP Feb. 1961	Lat	McMath Plage Number	Return of Region	Calcium Plague Data			Sunspot Data		
				CMP Values Area	Int.	History, Age	CMP Values Area Count		History
01.6	S22	6014	New	900	3.5	l — l	1		
03.3	N25	6016	5991	1600	2	l — l	4	220	2
04.1	N10	6027a	New	400	3	b / l	1		
05.2	N34	6017	5994	300	1.5	l — l	4		
05.3	S12	6018	5992	1500	3	l — l	3	50	2
06.1	N11	6019	5993	1300	2	l — l	9		
06.4	S07	6020	5995	800	2.5	l / l	3	80	1
08.0	S17	6021	5995	1000	1	l \ d	3		
10.0	S13	6023	5998	1800	3	l — l	7		
10.1	N06	6022	New	3700	3	l — l	1	420	9
11.4	S09	6025	New	1400	3	l — l	1	90	4
12.4	N26	6027b	*	600	1.5	b / l	6	100	2
14.0	N34	6028	*	200	1	b \ d	6		
14.9	S04	6026	6001	1000	2	l \ l	2		
18.8	N13	6030	6007	1000	1.5	l — l	4		
21.2	S04	6033	6010	200	1	l \ d	4		
22.4	N07	6034	6009	1500	2.5	l — l	2		
23.5	N07	6047	New	600	2.5	b / l	1		
23.7	S17	6036	New	2800	3	l — l	1	150	12
24.2	N27	6037	6011	1200	2.5	l — l	3		
24.4	N16	6038	6011	700	2.5	l — l	3		
25.5	N22	6039	6011	1100	2	l — l	3		
26.2	S13	6040	New	700	3	l — l	1	40	2
27.4	N10	6041	6013	2100	2	l — l	5	80	2
27.5	S16	6042	New	600	2.5	b / l	1		

\*5999, 6000

The number 6027 was inadvertently used twice 6027a formed on disk near west limb, February 9, 6027b - CMP February 12.

COMMERCE - STANDARDS - BOULDER

## FINAL CORONAL LINE EMISSION INDICES

OCTOBER 1960

CMT Oct. 1960	North East Quadrant (observed 7 days earlier)				South East Quadrant (observed 7 days earlier)				South West Quadrant (observed 7 days later)				North West Quadrant (observed 7 days later)			
	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>
1	31a	42a	x	x	44a	60a	15a	20a	44	79	4	17	50	58	5	23
2	46	54	25a	30a	77	162	30a	40a	x	x	x	x	x	x	x	x
3	46	53	22	46	59	105	28	75	44a	66a	x	x	35a	39a	x	x
4	56a	71a	15a	84a	57a	95a	45a	102a	37	63	10	10	44	51	14	24
5	117	120	11	18	107	119	7	10	63	80	26	40	69	101	17	26
6	90	98	17	27	74	90	10	11	65	89	9	18	65	75	8	12
7	119	120	20	31	103	120	25	57	29	33	12	18	41	62	20	54
8	119	120	28a	42a	96	120	17a	36a	88	150	20	37	76	95	9	18
9	88	94	8	19	93	105	9	28	77	126	20	56	74	91	14	28
10	114	151	20	38	111	173	14	35	106	171	14	34	97	150	7	18
11	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12	61	68	52a	86a	40	68	46a	60a	48	66	x	x	78	128	x	x
13	62	106	14	19	48	60	11	20	27	34	7	8	50	66	16	34
14	74	198	11	14	65	72	6	9	48	66	13	17	76	105	18	52
15	58	75	10	10	54	77	29	50	54	93	13	20	46	86	18	27
16	x	x	x	x	x	x	x	x	48	73	18	34	35	40	22	33
17	54a	60a	x	x	80a	112a	x	x	x	x	x	x	x	x	x	x
18	53	60	10	12	51	63	25	50	84	123	9	15	46	56	6	8
19	70	78	20	34	98	158	41	64	88	119	45	72	60	70	27	54
20	77	102	6	10	117	166	21	40	97	171	9	12	90	126	8	18
21	50	65	14	20	45	80	17	35	x	x	x	x	x	x	x	x
22	88	128	14	29	68	96	22	39	31	38	15	23	50	68	12	15
23	118	172	13	28	76	93	17	29	22	28	8	16	67	93	8	15
24	93	143	9	13	44	83	15	31	12	10	12	10	17	48	9	17
25	x	x	x	x	x	x	x	x	9	10	6	8	37	54	7	13
26	39	45	6	8	19	21	x	x	19	26	4	5	35	46	6	8
27	25	26	6	16	19	6	10	10	14	x	-	-	25	36	x	x
28	39	49	3	14	45	58	6	17	39	59	-	x	42	77	5	9
29	35	51	7	10	37	57	5	6	26a	28a	x	3	22a	36a	x	x
30	26	36	13	27	20	24	5	7	24	35	8	36	66	41	80	80
31	x	x	x	x	x	x	x	x	46	57	2	10	46	84	9	16

a = index computed from low weight data. \* = yellow line observed.

x = no observations. - = below threshold of visibility.

COMMERCIAL STANDARDS - BOULDER

## FINAL CORONAL LINE EMISSION INDICES

NOVEMBER 1960

IIc

CMP Nov. 1960	North East Quadrant (observed 7 days earlier)				South East Quadrant (observed 7 days earlier)				South West Quadrant (observed 7 days later)				North West Quadrant (observed 7 days later)			
	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>
1	78	121	12	18	37	53	4	5	29	56	9	10	64	90	24	42
2	90	116	37	66	51	65	18	28	69	124	32a	72	108	43a	27	74a
3	76	103	21	29	48	68	21	40	70	112	36	80	75	98	37	46
4	x	x	x	x	x	x	x	x	69	85	38	104	64	94	152	112
5	23	33	19	33	58	70	7	10	75	122	17	34	84	152	16	40
6	68	92	18	35	58	125	16	32	65	123	x	x	83	135	x	x
7	86	124	25	58	54	76	16	36	55	75	6	20	72	90	5	21
8	55	68	11	18	37	44	12	20	75	108	11	30	86	104	2	10
9	89	146	11	22	64	114	8	12	55	82	30	70	58	80	36	70
10	63	82	x	x	41	64	x	x	38a	56a	16a	43a	41a	66a	26a	52a
11	117	176	16	41	43	58	15	31	64	88	16	28	76:	118	21	30
12	97	146	67a	10 <sup>3</sup> a	72	136	30a	40a	x	x	x	x	x	x	x	x
13	108	132	17	23	64	100	14	32	43	56	17	24	48:	67	18	26
14	86	107	11	16	54	80	7	9	48	58	x	x	69	126	25a	30a
15	66	89	11	18	64	84	10	13	68	86	6	8	63	97	8	10
16	75	104	11	21	66	102	12	18	38a	56a	19a	32a	40a	60a	21a	36a
17	92	131	31	84	73	102	20	24	40	55	15	21	75	117	13	16
18	68	80	16	18	50	64	18	28	46	60	14	27	70	114	16	27
19	67	77	12	16	36	58	18	34	20	29	15	28	50	68	16	24
20	47	62	x	x	22	28	x	x	x	x	x	x	x	x	x	x
21	53	68	5	15	22	26	13	15	13a	16a	12a	16a	22a	29a	8a	18a
22	59	68	12	17	30	49	10	14	14	15	17	20	24	27	17	42
23	35	41	42	82	25	30	22	32	28	41	x	x	48	55	x	x
24	27a	40a	23a	59a	38a	60a	19a	58a	97	132	x	x	45	56	x	x
25	31	40	9	15	63	88	9	15	50	75	30	50	30	39	19	32
26	x	x	x	x	x	x	x	x	45	74	x	x	26	34	x	x
27	66	121	36	64	61	26	36	20	34	10	12	32	40	6	9	9
28	72	95	31a	64a	43	117	39a	56a	x	x	x	x	117	19	x	x
29	50	67	12	20	38	89	9	25	47	77	4	17	90	153	19	57
30	53a	89a	29a	35a	66a	62a	24a	80a	43	60	9	114	114	153	38	84

a = index computed from low weight data.    x = yellow line observed.

x = no observations.    - = below threshold of visibility.

COMMERCIAL STANDARDS BUREAU

## FINAL CORONAL LINE EMISSION INDICES

DECEMBER 1960

CIMP Dec. 1960	North East Quadrant (observed 7 days earlier)				South East Quadrant (observed 7 days earlier)				South West Quadrant (observed 7 days later)				North West Quadrant (observed 7 days later)				
	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	
1	79	149	23	67	40	58	10	38	62	77	-	-	142	24.0	25	50	
2	66	85	22	56	43	58	4	7	70	85	14	22	87	2.7	21	21	
3	87*	111	x	x	60	101	x	x	57	96	7	13	100	148	9	13	
4	x	x	x	x	x	x	x	x	34	50	13	25	32	44	6	14	
5	58*	84	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
6	49	59	42	57	50	87	25	52	x	x	x	x	x	x	x	x	
7	109	136	x	x	69	97	x	x	65	91	x	x	x	x	x	x	
8	x	x	104	68	x	x	x	x	84	136	7	12	81*	144	16	38	
9	101	124	68	67	103	31	72	55	76	18a	7	12	92*	170	37a	91a	
10	202	252	x	x	60	82	x	x	x	x	x	x	x	x	x	x	
11	48	60	9	20	26	36	5	9	51	70	8	12	105	144	11	32	
12	64	80	13	18	29	40	7	15	22	30	16	35	37	64	12	17	
13	68	100	14	23	39	60	15	35	55	85	11	31	69	92	10	28	
14	115	147	23	45	63	95	41	-	x	x	x	x	x	x	x	x	
15	120	191	19	43	57	95	-	x	x	x	x	x	x	x	x	x	
16	87	115	15	28	37	63	23	33	x	x	x	x	x	x	x	x	
17	77	95	14	20	33	45	12	16	30	58	31	72	42	48	12	46	
18	20	40	10	17	4	6	7	10	20	31	12	16	40	52	9	19	
19	x	x	x	x	x	x	x	x	13	28	12	20	26	46	13	23	
20	x	x	x	x	x	x	x	x	38	80	3	4	38	80	8	13	
21	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
22	25	32	9	11	38	58	5	7	27	39	7	12	25	36	12	18	
23	25	36	24	30	23	42	18	28	27	32	15a	20a	26	33	19a	33a	
24	x	x	x	x	x	x	x	x	24	30	7	13	24	30	7	10	
25	59	73	8	12	25	32	3	4	22	26	4	5	37	64	8	14	
26	23	28	17	32	13	18	6	9	14	20	6	8	22	42	11	15	
27	71	78	12	20	28	38	5	7	27	36	10	14	71	120	36	70	
28	x	x	x	x	x	x	x	x	x	45	63	28	40	123	60	109	
29	x	x	x	x	x	x	x	x	x	69	97	2	12	75	104	9	12
30	x	x	x	x	x	x	x	x	x	137	23	42	73	117	47	120	
31	70*	109	18	28	63	114	72	72	92	68	24	23	75a	116	45	93	

a = index computed from low weight data.

\* = yellow line observed.

x = no observations.

- = below threshold of visibility.

## PROVISIONAL CORONAL LINE EMISSION INDICES

FEBRUARY 1961

CMP Feb. 1961	North East Quadrant (observed 7 days earlier)			South East Quadrant (observed 7 days earlier)			South West Quadrant (observed 7 days later)			North West Quadrant (observed 7 days later)		
	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>
1	x	x	x	x	x	x	x	x	x	58	105	48
2	x	x	x	x	x	x	x	x	x	5	7	5
3	77a	113a	52	38a	42a	38	x	x	x	19	31	46
4	60	89	35	19	50	28	x	x	x	x	x	99
5	58	82	43	36	50	34	x	x	x	x	x	7
6	57	64	x	x	x	x	x	x	x	x	x	x
7	80	91	16a	18a	85	167	x	x	x	70	x	x
8	x	x	x	x	x	x	x	x	x	19	31	14
9	x	x	x	x	x	x	x	x	x	52	17	18
10	x	x	x	x	x	x	x	x	x	24	35	10
11	x	x	x	x	x	x	x	x	x	x	x	x
12	27	30	23a	29a	12	16	18a	26a	17	22	5	11
13	30	38	25a	38a	27	37	22a	28a	x	x	7	33
14	23	34	x	x	31	66	x	x	30	11	17	17
15	32	46	20	30	70	258	29	66	17	40	8	10
16	7	9	7	9	6	8	5	6	x	x	x	x
17	x	x	x	x	x	x	x	x	1C	9	12	x
18	x	x	x	x	x	x	x	x	8	14	7	10
19	x	x	x	x	x	x	x	x	x	x	x	x
20	48	60	x	x	38	58	x	x	26a	x	x	x
21	58	81	x	x	63	96	16a	20a	x	x	x	x
22	64	106	9	12	40	68	8	14	54	12	21	6
23	122	165	13	22	81	140	20	33	59	124	18	7
24	x	x	x	x	x	x	x	x	x	x	x	20
25	60	88	8	17	35	60	4	6	x	x	x	x
26	84	100	8	16	35	78	9	19	x	x	x	x
27	x	x	x	x	47	33	62	26	32a	x	53a	13a
28	58	92	20	47	33	62	38	38	x	x	x	x

x = no observations

a = index computed from low weight data

\* = yellow line observed

COMMERCE - STANDARDS - BOULDER

## SOLAR FLARES

FEBRUARY 1961

OBSERVATORY	DATE FEB 1961	OBSERVED UNIVERSAL TIME		APPROX. LAT. MER DIST.	DURA- TION MINUTES	IM- POR- TANCE	OBS COND	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END					MEATH PLAGE REGION	TIME	MEAS. AREA Sq. Deg.	CORR AREA Sq. Deg.
{ MEUDON UCCLE STOCKHOLM	01	0942 E	0953 D	N22 E26 N26 E26 N20 E22	6016 6016 6016	11 D 90 15 D	1 1+ 1+	3	0952 3.50	6.00 4.40	7.20 4.40
	01	0950 E	1120	0952	6016	15 D	1	1	1040	2.02	2.21
{ HUANCAYO SAC PEAK	02	2227	2230 D	2232	N09 W34 N10 W38	6013 6013	3 D 19	1	2230	1.80 2.02	2.20 2.11
	02	2227	2246	2232	N03 E89	6022	3 D	1	9929	.50	2.30
ARCETRI I	03	0926 E	0929 D	N03 E75	6022	12 D	2	3	1809	2.30 2.17	2.10 2.04
	04	0820 E	0832 D	N03 E75	6022	53	1	1	1809	4.30 4.54	2.0 1.6
{ LOCKHEED SAC PEAK	04	1757	1850 U	1809 U	N03 E69 N03 E74	6022	118 D	1	1	1809	2.30 2.17
	04	1817 E	2015	1820 U	N03 E74	6022	118 D	1	1	1809	4.30 4.54
WENDEL	06	1200 E	1232 D	S10 E63	6025	32 D	1	1	1416	4.00	
LOCARNO SAC PEAK	06	1410	1425	1416	N23 W43	6016	15	1+	1	1416	3.00
	06	1856 D	1856 D	N23 W43	6016	11 D	1	2	1853	3.42	1.9
{ HUANCAYO CLIMAX MCNATH	06	1848	1934	1851	N22 W46	6016	26	1	1853	2.60	
	06	1848	1927	1852	N25 W47	6016	39	1	1852	4.20	2.70
ARCETRI I	10	0826 E	0837 D	N10 W85	6027	11 D	1	3	0826	.60	2.30
	10	0930 E	0955 D	N10 W85	6027	25 D	1	3	0942	.80	3.10
ARCETRI I	10	0938 E	0951 D	N10 W85	6027	13 D	1	3	0942	.80	3.10
	13	0945	1020	0950	N03 W54	6022	35	1+	1	1000	5.00
LOCARNO	13	0945	1020	0950	N03 W54	6022	35	1+	1	1000	5.00
	14	0710 E	0736 D	N04 W69	6022	26	D	1	3	5.00	
ARCETRI I	14	0750 E	0810 D	N04 W63	6022	20 D	1+	1	3	5.00	
	14	0836	0853	N21 W69	6022	17	D	1	3	3.00	
WENDEL	14	0847	0850 D	S10 W44	6025	3 D	1	3	0850	1.50	
	14	0946 D	0946 D	S09 W68	6023	51 D	1+	1	5.00		
WENDEL	14	0905	0925	S07 W41	6025	20	D	1	3	3.00	
	14	1035 E	1050	N05 W65	6022	15 D	1	1	1040	2.00	
LOCARNO	14	1040 E	1047	N04 W65	6022	7 D	1	3	1040	3.00	
	14	1052 E	1107 D	N04 W65	6022	15 D	1	1	1040	3.00	
WENDEL	14	1136	1153 D	N04 W66	6022	17 D	1	1	1040	3.00	
	14	1353	1415 D	N03 W68	6022	22 D	1	1	1040	4.00	
UCCLE	14	1447 E	1525	1510	S13 W75	6023	38	1	3	1510	2.00
	14	1507 E	1535 D	N04 W69	6022	28 D	1	1	1509	.90	3.00
{ WENDEL	14	1509 E	N04 W69	N04 W69	6022	□	1	3	1509	.90	2.00
	14	1509 E	N04 W69	N04 W69	6022	□	1	3	1509	.90	2.00
ARCETRI I	15	0740 E	0802 D	S12 W87	6023	22 D	1	3	3.00		
	15	1105 E	1130 D	S10 W83	6023	25 D	1	3	1224	4.30	
UCCLE	15	1200 E	1224 E	N04 W87	6023	□	1	3	1224	1.10	
	15	1228 E	1224 E	N05 W82	6022	□	1	3	1241	.50	
{ ARCETRI I	15	1224 E	1241 D	S12 W87	6023	17 D	1	3	1241	.50	
	15	1225 E	1250 D	S12 W85	6023	25 D	1	2	1244	2.10	
WENDEL	15	1243 E	1258 D	S12 W90	6023	33 D	1	3	1351	3.00	
	15	1351 E	1424 D	S12 W87	6023	25	D	1	2.90	2.10	
{ ONTREJOV ARCETRI I LOCKHEED	15	1915	1940	1922	S12 W90	6023	1	1	1922	.40	1.0
	15	1915	1940	1922	S12 W90	6023	1	1	1922	Slow S-SWF	10

# SOLAR FLARES

## FEBRUARY 1961

OBSERVATORY	DATE FEB 1961	OBSERVED UNIVERSAL TIME		MAX. PHASE	APPROX. LAT.	MCMAHON PLACE REGION	DURA- TION MINUTES	IM- POR- TANCE	OBS. COND.	TIME UT	MEASUREMENTS		MAX. WIDTH Ha	MAX. INT. %	PROVISONAL IONOSPHERIC EFFECT
		START	END								MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.			
WENDEL	16	1553 E	1625 D		N07	E70	6034	32	D 1+	3	1150	2.00	5.00		
UCCLE	17	1145	1215		S03	E55	6033	30	D 1				2.50		
{ WENDEL	18	1438 E	1508 D		S10	E72	6036	30	D 1				3.00		
WENDEL	18	1513	1527 D		S10	E72	6036	14	D 1				4.00		
{ ARCTERI	19	0809	0829 D		S11	E60	6036	20	D 1+				6.00		
LOCARNO	19	0811 E	0830		S11	E68	6036	□	1						
WENDEL	20	1238 E	1335 D		S11	E62	6036	15	D 1+						
SAC PEAK	21	1818	1823	1820	S11	E45	6036	57	D 1				3.00		
LOCKHEED	21	2259	2342	2310	S15	E78	6040	5	1						
WENDEL	22	0753	0820		S13	E77	6040	43	1		2	2310	1.20	1.7	2.83
LOCARNO	23	1350	1450		S13	E69	6040	27	1				2.70		2.0
LOCARNO	27	1405	1435		S12	E35	6040	60	1				3.00		
					S12	W48	6036	30	1+						

COMMERCE - STANDARDS - BOULDER

E = LESS THAN  
 D = GREATER THAN  
 U = APPROXIMATE  
 □ = NOT REPORTED  
 CAPRI C  
 CAPRI S  
 GOOD HOPE  
 KIEV\*  
 KODAK TANAL  
 KRASNAYA PAKHRA  
 LOCKHEED  
 ANACAPRI - GERMAN  
 ANACAPRI - SWEDISH  
 ROYAL OBSERVATORY, CAPE OF GOOD HOPE  
 KLEV UNIVERSITY  
 KODAK TANAL  
 KRASNAYA PAKHRA  
 LOS ANGELES  
 MCMAHON-C  
 MOSCOW-C  
 R O HERST  
 HEISTMONCEUX  
 SAC PEAK  
 SCHAUTINSLAND  
 WENDELSTEIN

ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

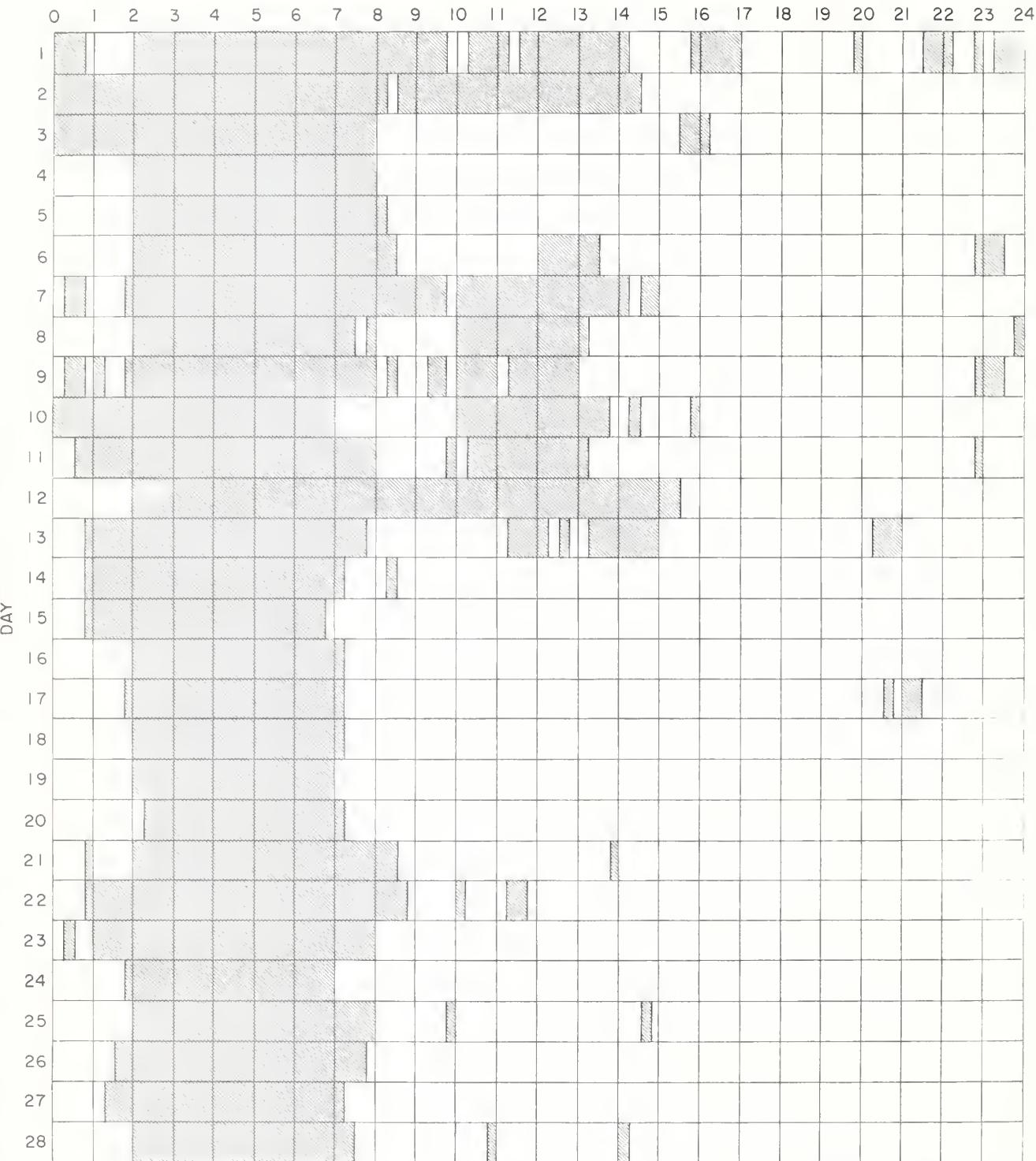
SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1960 FOR DEFINITION OF CORR. AREA VALUES LISTED FOR CLIMAX, HAWAII,  
 LOCKHEED AND SAC PEAK.

IIIc

## INTERVALS OF NO FLARE PATROL OBSERVATIONS

FEBRUARY 1961

HOUR-UT



COMMERCE - STANDARDS - BOULLEP

Stations Include:

Anacapri (Swedish)  
Arcetri  
Climax

Hawaii  
Huancayo  
Lockheed

McMath-Hulbert  
Meudon  
Ondrejov

Royal Greenwich Observatory  
Herstmonceux  
Sacramento Peak  
Uccle

## SUBFLARES

Noted as follows: Date - Universal Time - Coordinates

JANUARY 1961

LOCKHEED	01	1723	N17 W11		LOCKHEED	05	1928	N19 E54	HAWAII	17	1820	S04 E18
LOCKHEED	01	1815	N15 E63		LOCKHEED	05	1936	N17 W75	LOCKHEED	17	2003	S08 E60
LOCKHEED	01	1817	N15 W11		LOCKHEED	05	1936	N17 W75	LOCKHEED	17	2003	S08 E60
LOCKHEED	01	1846	N16 W08		LOCKHEED	05	1959	N19 E59				
LOCKHEED	01	1945	N16 W08		LOCKHEED	05	2040	N12 W70	LOCKHEED	18	0028	S03 E14
LOCKHEED	01	1945	N16 W08		LOCKHEED	05	2040	N12 W70	WENDEL	19	0956	S04 E11
LOCKHEED	01	1945	N16 W08		LOCKHEED	05	2040	N12 W70	WENDEL	19	0956	S04 E11
LOCKHEED	01	1945	N16 W08		LOCKHEED	05	2040	N12 W70	WENDEL	18	1106	S04 E10
LOCKHEED	01	1945	N16 W08		LOCKHEED	05	2040	N12 W70	WENDEL	18	1143	S05 E08
LOCKHEED	01	1945	N16 W08		LOCKHEED	05	2122	N22 E07	WENDEL	18	1143	S05 E08
LOCKHEED	01	1945	N16 W08		LOCKHEED	05	2155	N19 W99				
LOCKHEED	01	1945	N16 W08		LOCKHEED	05	2156	N07 E57				
LOCKHEED	01	2047	N18 W14		LOCKHEED	05	2208	N23 E11	WENDEL	19	0909	S04 W02
LOCKHEED	01	2120	N22 E62		LOCKHEED	05	2220	N24 E77	WENDEL	19	0909	S04 W02
LOCKHEED	01	2120	N22 E62		LOCKHEED	05	2250	N22 E08	LOCKHEED	19	1731	S01 E11
LOCKHEED	01	2120	N22 E62		LOCKHEED	05	2258	N23 E11	LOCKHEED	19	2129	S01 W10
SAC PEAK	01	2128	N20 W10		LOCKHEED	05	2347	N23 E09				
LOCKHEED	01	2155	N22 E61									
LOCKHEED	01	2155	N22 E61									
LOCKHEED	01	2237	N22 E61									
LOCKHEED	01	2237	N22 E61									
LOCKHEED	01	2327	N18 W19									
LOCKHEED	02	0000	N18 W15		* CAPPI	06	1207	E N21 W07	HAWAII	20	2306	S04 W29
WENDEL	02	1115	E N17 W22		* CAPPI	06	1207	E N21 W07	LOCARNO	21	1032	S04 W11
WENDEL	02	1208	E N16 W16		* CAPPI	06	1207	E N21 W07	HAWAII	21	2102	N15 E80
LOCKHEED	02	1600	E N22 E52		* LOCKHEED	06	1610	S15 W12				
LOCKHEED	02	1625	N12 E48		* LOCKHEED	06	1614	S15 W10	HAWAII	22	0150	N12 W37
LOCKHEED	02	1702	N17 W18		* MCMATH	06	1616	S12 E03	WENDEL	22	1328	S05 W49
SAC PEAK	02	1706	N20 W19		* MCMATH	06	1618	S12 E03				
LOCKHEED	02	1713	N22 E52		* MCMATH	06	1805	S13 E67	LOCKHEED	23	1815	N17 E58
LOCKHEED	02	1753	N22 E52		* MCMATH	06	1805	S14 E64	HAWAII	23	1834	E N12 E62
LOCKHEED	02	1755	N22 E52		* MCMATH	06	1855	S24 W07	LOCKHEED	23	1907	S05 W12
LOCKHEED	02	1755	N22 E52		* MCMATH	06	1856	S24 W04				
LOCKHEED	02	1755	N22 E52		* MCMATH	06	1857	S25 E01	LOCKHEED	24	1700	U N10 E11
LOCKHEED	02	1755	N22 E52		* MCMATH	06	1858	S25 E03	LOCKHEED	24	1925	N18 E35
LOCKHEED	02	1755	N22 E52		* MCMATH	06	1859	N21 W00	HAWAII	24	2026	N03 E80
LOCKHEED	02	1755	N22 E52		* MCMATH	06	1910	N23 W11	LOCKHEED	24	2030	N20 E35
CLIMAX	02	2032	N23 E46		* MCMATH	06	2056	N19 W71	LOCKHEED	24	2126	N19 E35
LOCKHEED	02	2041	N22 E46		* MCMATH	06	2205	N22 W78	LOCKHEED	24	2210	N20 E34
LOCKHEED	02	2042	N18 W19		* MCMATH	06	2206	N22 W78				
LOCKHEED	02	2208	N22 E50		* MCMATH	06	2255	N20 W78	HAWAII	25	2106	E S25 E90
LOCKHEED	02	2214	S17 E17						LOCARNO	26	1040	N12 F59
LOCKHEED	02	2216	S16 E38						STOCKHOLM	26	1040	E N07 E63
LOCKHEED	02	2300	N22 E47						* STOCK HOLM	26	1342	E N07 E62
HAWAII	03	0132	E N19 W26		LOCKHEED	07	0040	N24 W08				
UCCLE	03	1105	E N20 E45		HAWAII	07	0040	N23 E01	WENDEL	27	1029	E S07 W61
SAC PEAK	03	1520	N20 W36		HAWAII	07	0137	N22 W19	WENDEL	27	1137	E S07 W63
CLIMAX	03	1521	N18 W35		LOCKHEED	07	1638	N23 W19	CLIMAX	27	1636	S09 E42
CLIMAX	03	1555	N22 W31		LOCKHEED	07	1734	N22 W12	LOCKHEED	27	1737	N09 E41
LOCKHEED	03	1557	N22 W31		LOCKHEED	07	1903	S12 E53	HAWAII	27	1914	N07 E39
LOCKHEED	03	1557	N22 W31		LOCKHEED	07	2053	S12 E53	LOCKHEED	27	1915	N07 E41
LOCKHEED	03	1600	E N22 W33		LOCKHEED	07	2053	S09 E43				
LOCKHEED	03	1644	N21 E38		LOCKHEED	07	2053	N21 W17	LOCKHEED	28	0031	N11 E40
LU	03	1644	N21 E38		LOCKHEED	07	2124	N15 W90	WENDEL	28	0859	E N07 E33
LOCKHEED	03	1645	N18 W36		LOCKHEED	07	2145	S12 E53	WENDEL	28	1021	E S07 W38
LOCKHEED	03	1725	N12 E31		LOCKHEED	07	2234	S10 W93	WENDEL	28	1225	E E30 W30
LOCKHEED	03	1734	N17 W38		LOCKHEED	08	1644	S10 E45	LOCKHEED	28	1649	N07 W32
LOCKHEED	03	1737	N20 W37		SAC PEAK	08	1718	N22 W38	CLIMAX	28	1819	N09 E27
LOCKHEED	03	1807	N18 W37		LOCKHEED	08	1719	N21 W38	LOCKHEED	28	1850	N05 W32
LOCKHEED	03	1807	N22 E37		LOCKHEED	08	1821	S11 E43	LOCKHEED	28	1919	N05 E27
LOCKHEED	03	1807	N22 E37		LOCKHEED	08	1850	S11 E43	LOCKHEED	28	2027	N08 F32
LOCKHEED	03	1839	N17 W32		LOCKHEED	08	2203	S11 E43	LOCKHEED	28	2045	N11 E25
LOCKHEED	03	1856	N22 E31		LOCKHEED	08	2359	N20 W55	CLIMAX	28	2046	N09 E27
HAWAII	03	1858	E N19 E32		WENDEL	09	1025	E S10 E57	HAWAII	28	2048	N07 E24
UCCLE	03	1858	E N20 E34		WENDEL	09	1612	N22 W44	CLIMAX	28	2049	N07 E27
SAC PEAK	03	1858	E N20 E34		WENDEL	09	1907	N22 W44	LOCKHEED	28	2117	N11 L28
HAWAII	03	1900	N19 W37		WENDEL	09	1907	N22 W44	LOCKHEED	28	2117	N11 E28
LOCKHEED	03	1901	N17 W33		WENDEL	09	1907	N22 W44	LOCKHEED	28	2131	N06 F36
CLIMAX	03	1902	N18 W38		WENDEL	09	1907	N22 W44	LOCKHEED	28	2131	N06 E36
LOCKHEED	03	1952	N17 W38		SAC PEAK	09	2028	N20 W54	LOCKHEED	28	2131	N06 E36
SAC PEAK	03	1957	N17 W39		LOCKHEED	09	2028	N20 W54	LOCKHEED	28	2138	N06 E38
HAWAII	03	2020	N20 W34		LOCKHEED	09	2038	N08 E03	LOCKHEED	28	2222	N05 W22
LOCKHEED	03	2024	N23 E34		LOCKHEED	09	2046	S12 E29	HAWAII	28	2254	N05 E27
LOCKHEED	03	2024	N17 W39		LOCKHEED	09	2333	S06 E48	HAWAII	28	2254	N06 W33
LOCKHEED	03	2024	N17 W39		WENDEL	10	0900	E N08 W78	LOCKHEED	28	2302	N05 W32
LOCKHEED	03	2042	N23 E36		WENDEL	10	1551	N10 E90	HAWAII	28	2327	N12 E29
LOCKHEED	03	2050	N19 W37		WENDEL	10	1650	N29 E85	LOCKHEED	28	2338	N11 E29
LOCKHEED	03	2113	N17 W41		WENDEL	10	1735	S11 E17	HAWAII	28	2344	N06 E26
SAC PEAK	03	2115	N21 W42		WENDEL	10	1830	N21 W54				
HAWAII	03	2116	N21 E31		MCMATH	10	1938	N30 E90	HAWAII	29	0004	E N07 E34
LOCKHEED	03	2146	N19 W39		MCMATH	10	2135	N11 W85	LOCKHEED	29	0101	N12 E26
HAWAII	03	2146	N20 W39		MCMATH	10	2135	N11 W85	HAWAII	29	0110	N12 W45
LOCKHEED	03	2146	N17 W39		MCMATH	10	2135	N11 W85	WENDEL	29	0150	N07 W45
LOCKHEED	03	2158	N21 E33		MCMATH	10	2146	S13 W49	WENDEL	29	0157	N07 E37
LOCKHEED	03	2216	N16 W39		MCMATH	10	2170	S13 W49	WENDEL	29	1433	N11 E20
LOCKHEED	03	2221	N17 W33		MCMATH	10	2240	S13 W55	WENDEL	29	1436	E N06 W45
LOCKHEED	03	2252	N17 W34		MCMATH	10	2240	S13 W55	WENDEL	29	1452	N10 E19
LOCKHEED	03	2312	E N22 E33		MCMATH	10	2313	S09 W29	WENDEL	29	1503	E N07 E17
LOCKHEED	03	2315	N21 E33		SAC PEAK	10	2137	S08 W30	MCMATH	29	1509	N07 E18
LOCKHEED	03	2329	N23 E33		LOCKHEED	10	2157	S06 E42	CLIMAX	29	1508	E N06 E18
LOCKHEED	04	0002	N23 E33		LOCKHEED	11	1722	N10 W90	HAWAII	29	1617	N09 E17
LOCARNO	04	0948	N21 E28		LOCKHEED	11	2145	N20 W74	HAWAII	29	1756	E N16 E17
UCCLE	04	1043	N21 W38		LOCKHEED	12	2122	S10 E13	HAWAII	29	1867	N06 W47
LOCARNO	04	1435	N20 E45		LOCKHEED	12	2010	S09 E12	CLIMAX	29	1868	N10 E17
LOCARNO	04	1444	N20 E30		LOCKHEED	13	2000	S13 W24	HAWAII	29	1846	N10 E17
LOCKHEED	04	1621	N22 E24		LOCKHEED	13	2019	S12 S25	MCMATH	29	1847	N10 E17
CLIMAX	04	1622	N22 E24		LOCKHEED	13	2016	S12 S24	CLIMAX	29	2133	N15 E20
SAC PEAK	04	1709	E N18 W47		LOCKHEED	13	2137	S08 W30	CLIMAX	29	2146	N09 E12
LOCKHEED	04	1710	N21 W46		LOCKHEED	13	2137	S08 W30	SAC PEAK	29	2147	N11 E14
LOCKHEED	04	1734	N22 E26		LOCKHEED	16	2220	S10 W53	HAWAII	29	2316	E N06 E16
SAC PEAK	04	1834	N22 E26		LOCKHEED	16	2220	S10 W53	CLIMAX	31	1717	N11 W12
LOCKHEED	04	1836	N22 E26		WENDEL	17	0826	E N10 E48	HAWAII	31	2028	S04 E13
LOCKHEED	04	1836	N22 E26		WENDEL	17	1133	S04 E72	CLIMAX	31	2108	N10 W13
LOCKHEED	04	1836	N22 E26		WENDEL	17	1700	E S03 E19	SAC PEAK	31	2108	N11 W14
LOCKHEED	04	1918	N18 W58		LOCKHEED	17	1815	S06 E68				
SAC PEAK	04	1925	N22 E23									
SAC PEAK	04	2104	N16 W16									
HAWAII	04	2106	E N22 E23									
HAWAII	04	2140	N24 E16									
LOCKHEED	04	2207	N23 E22									
LOCKHEED	04	2324	E N22 E22									
HAWAII	04	2354	N22 E22									
UCCLE	05	0924	N25 E12									
LOCKHEED	05	1720	N23 E07									
LOCKHEED	05	1851	N19 W73									
LOCKHEED	05	1854	N23 E13			</						

# SOLAR FLARES

## NOVEMBER 1960

OBSERVATORY	DATE NOV 1960	OBSERVED UNIVERSAL TIME			APPROX. LAT. MER DIST.	DURA- TION MINUTES	IM- POR- TANCE	ONS. COND.	TIME UT	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX PHASE						MEAS. AREA Sq. Deg.	MAX WIDTH Nm	MAX INT. %	
CAPRI G	02	0930 E	0940 D		S06	E22	5915	10 D	2	1	6•00		
CAPRI G	02	1250	1300		S06	E16	5915	10	1	1	3•00		
TASHKENT	03	0616 E	0644	0620	N15	W23	5913	28	1	3	0620	1•45	2•00
CAPRI G	03	0838 E	0850	D	N22	W28	5913	12 D	1	1	3•00		
{ ABASTUMANI	04	0559	0621	0604	N16	W36	5913	22	1	4		1•35	6•4
{ CAPRI G	04	0720 E	0823 D		S06	W06	5915	69 D	2	1	6•00		
{ ABASTUMANI	04	0721	0825 D	0808 U	S07	W06	5915	64 D	1	2		1•80	6•6
{ GOOD HOPE	04	0738	0827 D	0740	N16	E42	5921	47 D	1	2	0740	3•20	
{ GOOD HOPE	04	0740	0827 D	0751	N16	E40	5921	45	1+	2	0807	3•90	5•20
{ CAPRI G	04	0745	0830		N14						4•00		
GOOD HOPE	05	0805	0836	0812 U	N22	E90	5925	31	1	2	0812	•60	
GOOD HOPE	05	1157	1327	1217 U	N13	E22	5921	90	2	1217	7•90		
GOOD HOPE	05	1232	1303	1241	N22	E88	5925	31	1	1241	1•60		
VOROSHILOV	06	0004	0012	0007	N25	E78	5925	8	2	3	1319	1•17	117
GOOD HOPE	06	1314	1340	1319	N24	W85	5909	26	1	2		•80	
CAPRI G	06	1325 E	1335 D		S16	E38	5923	10 D	1	2	3•00		
CAPRI G	07	0815 E	0830		N21	E60	5925	15 D	1	2		4•00	
CAPRI G	07	0819 E	0834 D		S03	W74	5926	15 D	1	2		4•00	
UCCLE	07	0822 E	0830		S03	W75	5926	8 D	2	2	0822	4•00	
CAPRI G	07	1305 E	1320 D		S12	E20	5923	15 D	1	2	3•00		
GOOD HOPE	08	0635 E	0717		S03	W87	5926	42 D	1	2	0635	1•20	
GOOD HOPE	08	0732	0804	0740	S03	W87	5926	42	1	2	0740	•90	
CAPRI G	08	0754 E	0803 D		N23	E44	5925	9	1	2		3•00	
PIRCULI	08	0807	0821	0814 U	N24	E47	5925	14	1	2		1•37	
CAPRI G	08	1444 E	1455 D		N28	E46	5925	11 D	2	2		6•00	
CAPRI G	08	1444 E	1455 D		S10	E44	5927	11 D	1+	2	4•00		
PIRCULI	09	0747	0855	0844 U	N23	E20	5925	68	1	3		4•56	54
PIRCULI	09	0925	0935	0932	N09	W44	5921	12	1	1		•91	50
PIRCULI	09	0931	0936	0935 U	N26	E41	5925	7	1	2		1•83	56
CAPRI G	09	0941 E	0957		S18	E08	5923	16 D	1	2		3•00	
{ CAPRI G	09	0956	1008	1000	E31	W31	5922	12	1	2		2•28	51
C9	1000	1007	1007		N24	E33	5922	7	2	2		2•00	
CAPRI G	09	1214 E	1240 D		N12	W30	5921	26 D	1	2		4•00	
GOOD HOPE	09	1247	1257	1249	N10	W47	5921	10	1	2	1249	2•40	
GOOD HOPE	09	1336	1344 D	1340	S10	E34	5927	8 D	1	2	1340	1•70	
SIMEIZ	10	0656 E	0740 D	0704	N26	E28	5925	44 D	1	1	0704	1•80	118
PIRCULI	10	0744	0850	0818 U	N30	E30	5925	66	1+	3		7•29	60
{ AHASTUMANI	10	0754	0854	0804	N30	E34	5925	60 D	1	1		•90	1•20
SIMEIZ	10	0756 E	0907 D	0819	N28	E32	5925	71 D	1	1	0819	1•80	94
KIEV	10	0620 E	0910 D	0820	N28	W32	5921	50 D	1+	1	0820	2•06	68
PIRCULI	10	0920 E	0943 D	0922 U	N07	W58	5921	15	1	1		1•09	59
PIRCULI	10	0920 E	0940 D	0922 U	S13	W47	5923	20 D	1	1	1•83	59	
GOOD HOPE	10	1009	1230 D	1021	N29	E29	5925	141 D	3	2	1027	1•70	50

SOLAR FLARES

NOVEMBER 1960

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME			MAX. PHASE	LOCATION APPROX.	LAT.	MID. DIST.	MEASURED PLATE REGION	DURATION - MINUTES	IM. POR- TANCE	OBS. COND.	TIME U.T.	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX. PHASE										CORR. AREA Sq. Deg.	MAX. WIDTH Hz	MAX. INT. %	
CARRIG NIZAMIAH CLIMAX	NOV 1960	10 1018 E	1254	1025	N28 E30	5925	156 D	3	2	20.00	4.86	5.71	2.90				
VOROSHILOV VOROSHILOV NIZAMIAH	10 1042 E	1103 D	1045	N24 W24	5923	21 D	1+	2	1045	4.86	5.71	4.00	127 S-SWF S-SWF				
PIRCULI GOOD HOPE PIRCULI GOOD HOPE	10 2145 11 0044 0305	E 0341 0428	D 0556 0446	0.0446	N22 E13	5925	51	1+	3	3.32	15.71	6.85	2.20	132 S-SWF S-SWF			
CARRIG NIZAMIAH CLIMAX	11 0341 0711	E 0808 0818	D 0739 0800	0.739	N29 E12	5925	83 D	2+	1	0341	6.08	7.29	5.30	127 S-SWF S-SWF			
PIRCULI GOOD HOPE PIRCULI GOOD HOPE	11 0740 0746	E 0800 1014	D 0755 1052	0.755	N32 E19	5925	57 D	1+	2	0740	1.09	3.90	3.30	132 S-SWF S-SWF			
CARRIG NIZAMIAH CLIMAX	11 1011 1012	E 1031 1155	D 1012 1142	1.012	N32 E16	5925	58 D	1	1	1014	1.60	1.90	1.90	132 S-SWF S-SWF			
PIRCULI ABASTUMANI PIRCULI GOOD HOPE PIRCULI GOOD HOPE	12 0735 0739	E 0748 0750	D 0738 0741	0.738	N28 E02	5925	13 D	1	2	1.73	1.08	1.20	1.20	132 S-SWF S-SWF			
PICULI GOOD HOPE PIRCULI GOOD HOPE	12 0807 0929	E 0821 0945	D 0810 0934	0.810	N28 E02	5925	11	1	3	1.19	2.60	2.90	2.90	132 S-SWF S-SWF			
PICULI GOOD HOPE PIRCULI GOOD HOPE	12 0954 1025	E 1025 1041	D 1004 1008	1.025	N28 E02	5925	14 D	1	1	0934	5.47	5.47	5.47	132 S-SWF S-SWF			
PICULI UCLE CARRIG NEDERHORST	12 1001 1005	E 1047 1025	D 1010 1008	1.047	N28 E02	5925	31	1+	4	1008	3.20	3.50	3.50	132 S-SWF S-SWF			
PICULI NEDERHORST MEDDON GOOD HOPE NEDERHORST	12 1012 1015	E 1030 1030	D 1030 1030	1.012	N27 W00	5925	45 D	1+	4	1010	5.00	5.00	5.00	132 S-SWF S-SWF			
PICULI CARRIG NEDERHORST CLIMAX	12 1315 1327	E 1425 1400	D 1330 1400	1.330	N28 W01	5925	16 D	1	3	1331	3.00	3.10	3.10	132 S-SWF S-SWF			
PICULI GOOD HOPE NEDERHORST	12 1346 1415	E 1400 1435	D 1400 1444	1.415	N27 W02	5925	70 D	3+	3	1331	3.00	3.10	3.10	132 S-SWF S-SWF			
PICULI GOOD HOPE NEDERHORST CLIMAX	12 1444 1900	E 1435 1900	D 1444 1900	1.444	N27 W04	5925	33 D	3+	3	1503	1.09	1.09	1.09	132 S-SWF S-SWF			
VOROSHILOV PIRCULI TASHKENT GOOD HOPE PIRCULI GOOD HOPE	13 0000 0728	E 0052 0746	D 0016 0730	0.052	N27 W20	5925	20 D	1	3	1503	12.50	12.50	12.50	132 S-SWF S-SWF			
VOROSHILOV PIRCULI SIMEIZ PIRCULI GOOD HOPE	13 0731 0732	E 0754 0750	D 0732 0734	0.754	N28 W10	5925	18 D	1	2	7.45	4.56	4.56	4.56	132 S-SWF S-SWF			
VOROSHILOV PIRCULI GOOD HOPE	13 0818 1054	E 0828 1122	D 0820 1059	0.828	N29 W09	5925	23	1	2	0732	2.27	3.00	3.00	132 S-SWF S-SWF			
VOROSHILOV PIRCULI GOOD HOPE	13 1117 1226	E 1132 1240	D 1120 1228	1.117	N30 W10	5925	18	1	1	0734	2.80	3.10	3.10	132 S-SWF S-SWF			
VOROSHILOV PIRCULI GOOD HOPE	13 1306 1347	E 1435 1311	D 1444 1347	1.347	N17 W90	5921	10	1	1	1059	5.47	5.47	5.47	132 S-SWF S-SWF			
VOROSHILOV PIRCULI GOOD HOPE	13 1306 1444	E 1435 1444	D 1444 1444	1.444	N15 E54	5932	28	1	1	1120	9.90	9.90	9.90	132 S-SWF S-SWF			
VOROSHILOV PIRCULI GOOD HOPE	13 1444 1900	E 1435 1900	D 1444 1900	1.444	N25 E59	5932	14 D	1	2	1228	1.50	2.70	2.70	132 S-SWF S-SWF			
VOROSHILOV PIRCULI GOOD HOPE	13 1900 2147	E 1444 2147	D 1444 2147	1.444	N25 E59	5932	41	2	2	1311	2.80	5.80	5.80	132 S-SWF S-SWF			
VOROSHILOV PIRCULI GOOD HOPE	14 0022 0310	E 0036 0515	D 0024 0515	0.024	S06 W28	5927	14	1	2	1.97	6.08	7.20	7.20	132 S-SWF S-SWF			
VOROSHILOV PIRCULI GOOD HOPE	14 0800 1155	E 0900 1210	D 0815 1210	0.800	N27 W22	5925	125 D	1	2	0.310	2.70	2.70	2.70	132 S-SWF S-SWF			
VOROSHILOV PIRCULI GOOD HOPE	14 1155 1554	E 1210 1645	D 1210 1645	1.155	N28 W25	5925	60 D	1	2	0815	7.29	7.29	7.29	132 S-SWF S-SWF			
VOROSHILOV PIRCULI GOOD HOPE	14 2130 2300	E 2147 2331	D 2147 2331	2.130	N28 W29	5925	15 D	1	2	1555	4.00	4.00	4.00	132 S-SWF S-SWF			
VOROSHILOV PIRCULI GOOD HOPE	15 0240 0248	E 0248 0248	D 0248 0248	0.240	N25 W37	5925	17 D	1	2	2131	3.70	4.10	4.10	132 S-SWF S-SWF			

## SOLAR FLARES

NOVEMBER 1960

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME			APPROX. MAX. PHASE	LAT.	MER. DIST.	LOCATION	DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	TIME	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH Ha	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
		START	END	MER. DIST.													
{ PIRCULI	15	0624	E	0705	D	0624	U	N30 W32	5925	41 D	1+	3	6•56	56			
{ PIRCULI	15	0624	E	0758	D	0745	U	N22 W48	5925	94 D	1		1•83		65		
{ PIRCULI	15	0658		0720	U	N22 W39		5925	52 D	1			3•19		64		
{ GOOD HOPE	15	0701		0739		0707		N22 W44	5925	38	1	0707	1•90	2•80			
{ PIRCULI	15	0703	E	0750	D	0718	U	N28 W30	5925	47 D	1		3•92		67		
{ GOOD HOPE	15	0740		0803		0745		N28 W42	5925	23	1	0745	1•60	2•30			
CAPRI G	15	1240		1305				N26 W42	5925	25	1		4•00				
GOOD HOPE	16	0631	E	0652				N28 W51	5925	21 D	1		0633	1•70	3•10		
GOOD HOPE	16	0808		0822		0811		N25 W88	5925	14	1		0811	•80			
{ GOOD HOPE	16	0833		0856		0843		N25 W88	5925	23	1		0843	•70			
{ PIRCULI	16	0838		0856	D	0846		N25 W88	5925	18 D	1+		1•83		57		
{ SIMEIZ	16	0852		0856	D	0856		N17 E10	5932	4 D	1	2	0856	2•70			
{ PIRCULI	16	0852		0924	D	0900		N17 E12	5932	32 D	1		4•37		160		
{ GOOD HOPE	16	0853		0931		0857		N18 E09	5932	38	1		0857	2•20	2•30		
GOOD HOPE	16	1129		1142		1131		N29 W50	5925	13	1		1131	1•50	•50		
GOOD HOPE	17	1152		1205		1157		N26 W76	5925	13	1		1157	1•50			
CLIMAX	17	1509	E	1525		2105		N16 W03	5932	16 D	1		1509	3•00			
CLIMAX	17	2045		2105		2047		N27 W74	5925	20	2		2049	1•00	2•10		
CLIMAX	17	2126		2150				N23 W90	5925	24	3		2135	3•60	18•00		
VOROSHILOV	18	0222	E	0225				N29 W75	5925	3 D	1	2	0223	1•07	63		
GOOD HOPE	18	0639	E	0650		0701		N28 W80	5925	11 D	1		0639	•80			
GOOD HOPE	18	0659		0734		0734		N28 W80	5925	35	1		0701	•50			
{ GOOD HOPE	18	0947	E	1013		0922		N28 W80	5925	26	1		0952	•80			
{ Krasnya	18	0947	E	1014	D	0952		N41 W90	5925	27 D	1+		2•25				
{ CAPRI G	18	0948		1009		0953		N29 W80	5925	21	1	2	0953	4•00			
{ GOOD HOPE	18	0949		1034		0953		N19 W21	5932	45	1		1•60	1•70			
{ CAPRI G	18	0950		1024				N18 W18	5932	34	1	2	4•00				
GOOD HOPE	19	0634	E	0659				N23 W13	5932	25 D	1		0634	2•00	2•20		
GOOD HOPE	19	0727		0749		0729		N08 W29	5932	22	1		0729	2•20	•60		
GOOD HOPE	19	1057		1117		1059		N28 W90	5925	20	1		1059	•20			
{ CAPRI G	20	0840	E	0858		0918	U	N19 W38	5932	18	1	2	4•00	3•16	4•43		
{ ABASTUMANI	20	0850	E	0921	D	2032		N16 W40	5932	31 D	1	1	2008	5•80	24•00		
CLIMAX	20	1955		2117	D	2257		N25 W90	5925	37	3		2145	4•60	23•00		
GOOD HOPE	21	0658	E	0714				N09 W59	5932	16 D	1		0658	1•60	3•20		
GOOD HOPE	21	0840		0901		0843		N09 W59	5932	21	1		0843	1•00	2•00		
{ GOOD HOPE	21	1156		1221		1159		N22 W44	5932	25	1		1159	3•50	5•10		
{ CAPRI G	21	1157	E	1215	D	1215		N18 W43	5932	18 D	1+	2	2105	2•70	3•60		
CLIMAX	21	2100		2135				N22 W48	5932	35	1						
GOOD HOPE	22	0758		0935		0812		N22 W53	5932	97	1		0812	2•50	4•40		
GOOD HOPE	22	1126		1149		1149		N21 W55	5932	23	1		1135	1•30	2•80		
GOOD HOPE	23	1048		1103		1051		N08 W90	5932	15	1		1051	•30			
CAPRI G	26	1020	E	1040				N10 E50	5948	20 D	1	2	4•00				

# SOLAR FLARES

## NOVEMBER 1960

OBSERVATORY	DATE NOV 1960	OBSERVED UNIVERSAL TIME		MAX. PHASE	APPROX. LAT.	MER. DIST.	LOCATION ME-MATH PILAJE REGION	DURA- TION MINUTES	IM- POR- TANCE	OBS. COND.	TIME UT	MEASUREMENTS		MAX. WIDTH Ha	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
		START	END									MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.			
CAPRI G	27	1205	1213		N14 503	E33 E14	5948 5946	8 24	1 1+		2	4•00				
CAPRI G	27	1326	1350		N14 503	E14	5946	24	1+		2	5•00				
CLIMAX	28	1559	1625	1630	S09	E75	5953	26	2		1630	3•60	7•60			
VOROSHILOV	29	0106	0138	0109	N10 N10	E07	5948	32	1+		2	2•60				
CAPRI G	30	0923	0935		N09 N09	W11 W13	5948 5948	12 15	1		2	2•00				
CAPRI G	30	1222	1237		N09 N09	W13	5948	15	1		2	1•00				

COMMERCE - STANDARDS - BOULDER

These flare reports are addenda to the November 1960 flares published in CRPL-F-196 Part B, December 1960.

### Criteria:

Two flares observed at UCLE, August 18, 1959 and published in CRPL-F-184B page IIII December 1959 should be corrected by one hour. Flare starting at 1123 ending at 1127P, the maximum at 1127 should be 1023, 1027P and 1027. The second flare starting time 1138E, no ending time reported, maximum 1138 should be 1038E and 1038 respectively. All hours given are Universal Times.

In CRPL-F-195B issued February 1961, page IIII, the flare reported by UCLE October 24, 1960 at 1459E U.T. should have been October 25, 1960 at 1459E U.T.

# SOLAR FLARES

## OCTOBER 1960

OBSERVATORY	DATE OCT 1960	OBSERVED UNIVERSAL TIME		MAX. PHASE	APPROX. LAT.	MER. DIST.	LOCATION ME-MATH PILAJE REGION	DURA- TION MINUTES	IM- POR- TANCE	OBS. COND.	TIME UT	MEASUREMENTS		MAX. WIDTH Ha	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
		START	END									MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.			
GOOD HOPE	25	1047	1113		N23	E85	5909	26	1		1052	1•80				
GOOD HOPE	29	0659	0722	0701	S07 N24	E86 E29	5915 5909	23 146 D	1		0701	1•10				
GOOD HOPE	29	1026	1252 D	1030							1056	10•40	12•50		G-SWFT	

These flare reports are addenda to the October 1960 flares published in CRPL-F-195 Part B, November 1960 and CRPL-F-198 Part B, February 1961.

Note:

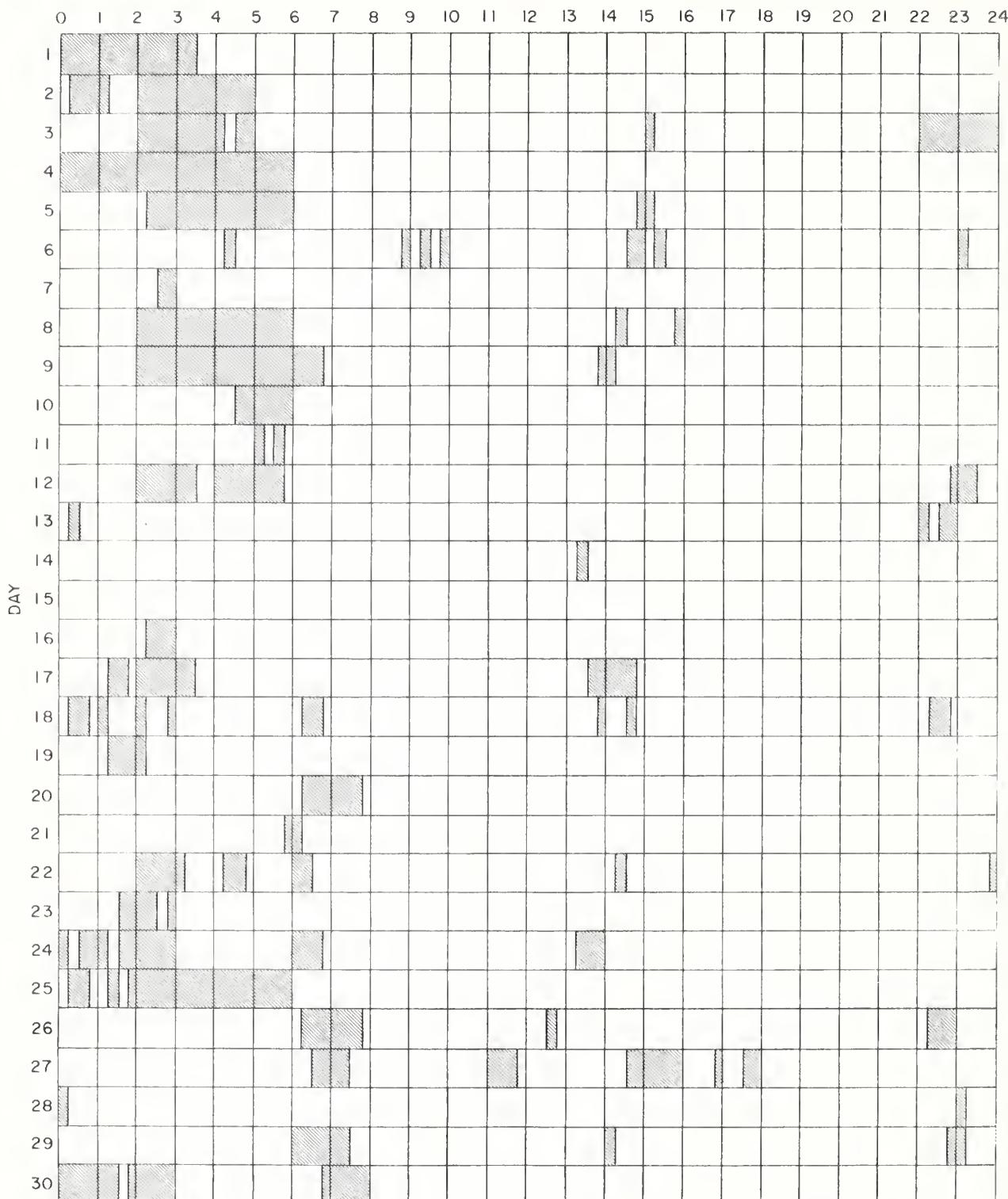
The hours of no flare patrol observations for October 1960 in CRPL-F-198 Part B page B page IIII issued February 1961 should be amended to include Good Hope patrol as follows:

- Oct. 25: 0215-0230, 0245-0330, 1315-1330.
- 26: 0400-0600, 1400-1415.
- 29: 0115-0130, 0200-0300, 1315-1415.
- 30: 0545-0600.
- 13: 0200-0600, 1315-1430.

## INTERVALS OF NO FLARE PATROL OBSERVATIONS

NOVEMBER 1960

HOUR-UT



Stations Include:

Abastumani	Hawaii	Kodaikanal	Nizamiah	Simeiz
Alma Ata	Huancayo	Lockheed	Ondrejov	Tashkent
Anacapri (Swedish)	Istanbul	McMath-Hulbert	Pirculi	Uccle
Arcetri	Kharkov	Meudon	Royal Greenwich Observatory	Voroshilov
Climax	Kiev GAO	Mitaka	Herstmonceux	
Good Hope	Krasnaya Pahra	Moscow-G	Sacramento Peak	

## IONOSPHERIC EFFECTS OF SOLAR FLARES

IIIj

(SHORT-WAVE RADIO FADEOUTS)

JANUARY 1961

Jan. 1961	Start UT	End UT	Type	Wide Spread Index	Impor- tance	Observation Stations	Known Flare, UT CRPL-F 198
3	1910	1925	Slow S-SWF	5	1-	FM, HU, MC, RP	
4	0207	0230	S-SWF	5	1	AD, CA, OK, TO	*
4	1712	1755	Slow S-SWF	5	1+	BE, BO, FM, HU, MC, PR	1729E
5	1343	1435	Slow S-SWF	5	1+	HU, NE, PR	1345
17	0452	0515	S-SWF	1	1-	OK	*
30	1423	1440	S-SWF	4	1	BE, MC, PR	1418
31	1512	1526	S-SWF	5	1	BE, HU, MC, PR	1502

CA = Canberra, Australia

NE = Nederhorst den Berg, Netherlands

TO = Hiraiso Radio Wave Observatory, Japan

## IONOSPHERIC EFFECTS OF SOLAR FLARES

( Sudden Cosmic Noise Absorption  
 Sudden Enhancements Of Atmospherics  
 Solar Noise Bursts At 18 Mc. )

JANUARY 1961

Jan. 1961	CLASS			WIDESPREAD INDEX	TIME (UNIVERSAL TIME)			PERCENT ABSORPTION SCNA	OBSERVATION STATIONS
	SCNA	SEA	Burst		BEGIN	MAX.	END		
1		1+		1	0154	0206	0242		TY
1	1			1	0742	0748	0804		TY
3	1			1	0019	0030	0057		TY
3	1			1	0130	0136	0156		TY
3	1+			1	0546	0554	0620		TY
3	1			1	0705	0712	0734		TY
{ 4	1			5	0206	0210	0223	25	HA, SY
{ 4	1	1+		5	0207	0225	0304		HA, TY
{ 4	1		2	5	1707	1720	1803		A1, A9
{ 4	1			5	1713	1721	1800	20	BO, MC, RE, SP
5	1			1	1145E		1205		NE
* 5	2			5	1349		1434		NE, PA
17	1-			1	0454	0458	0519		TY
27			1	5	1737		1741		BO, MC, RE, SP
28	1			3	1645	1652	1715		A1, A3
28		1		3	1921		1923		BO, SP
29		1		5	1846		1850		BO, MC, SP
30		1		1	0159		0203		HA
30	1			4	0633	0638	0654		A11, TY
*30	1			5	1425		1445		A3, A10, NE, PA
{30		1	1	5	2004		2006		BO, MC, SP
*30	1			4	2005	2011	2033		A3, BO
{30	1			5	2006E	2009	2010D	10	BO, HA
{30			1	5	2010		2011		BO, MC, SP
{31		1		5	2134		2137		BO, HA, SP
*31	1			5	2137	2140	2153	20	BO, HA, SY
{31	1			1	2137	2145	2200		A1, BO

SY = Sydney, Australia

TY = Research Institute of Atmospherics, Toyokawa, Japan.

\* = Sudden Enhancement of Signal from 18 kc (NBA-Panama Canal Zone)  
 observed by A5.

COMMERCE - STANDARDS - BOULDER

**SOLAR RADIO EMISSION  
OUTSTANDING OCCURRENCES**

FEBRUARY 1961

OTTAWA

2800 MC

Feb. 1961	Type	Start UT	Duration Hrs.Mins	Maximum		Remarks
				Time UT	Peak Flux	
4	3 Simple 3 A	1757	50	1807	3	
	1 Simple 1	1759.5	3	1801	2	
11	1 Simple 1	1404.5	4	1405.8	2	
12	3 Simple 3 f	1507	10	1509	2	
27	3 Simple 3	1406	1 05	1408 °	3	

COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION  
OUTSTANDING OCCURRENCES

FEBRUARY 1961

BOULDER

108 MC

Feb. 1961	Type	Start UT	Time of Maximum UT	Duration Minutes	Intensity	Feb. 1961	Type	Start UT	Time of Maximum UT	Duration Minutes	Intensity
1	7	2207	2229	69	2	13	3	1831.2	1831.6	0.5	2
2	3	2305.7	2306.1	0.4	2	13	3	2331.5	2331.9	0.4	1
3	2	1953.5	1955.2	2.5	2	13	3	2351.4	2351.8	0.5	2
4	3	2310.0	2310.2	0.4	2	14	3	1551.5	1552.0	0.6	2
7	3	2230.0	2230.3	1.0	2	14	3	2101.0	2102.0	1.1	2
7	3	2239.0	2239.5	0.5	2	15	3	0006.9	0007.3	0.5	2
7	3	2245.0	2245.4	0.4	2	15	3	2234.3	2235.0	1.2	2
7	3	2247.5	2247.8	0.4	2	16	3	1402.0	1402.6	0.7	3
7	3	2251.1	2251.4	0.4	2	16	3	2205.9	2206.2	0.4	2
8	3	2258.2	2258.6	0.4	2	17	3	0012.5	0013.0	0.5	2
9	3	1448.7	1449.4	2.3	2	17	3	1737.0	1737.3	0.5	2
9	3	1927.0	1927.4	0.5	2	18	3	2005.5	2006.0	0.6	2
10	6	1405 E	1517	199 D	2	18	3	2246.3	2246.8	0.5	3
11	2	1623.3	1624.6	2.2	1	18	3	2331.0	2331.6	0.6	2
11	3	1715.7	1717.0	2.8	2	19	3	1707.2	1707.5	0.3	2
11	3	2017.3	2017.5	0.4	2	19	3	1841.0	1841.3	0.4	2
11	3	2208.5	2210.6	2.8	2	20	3	1606.0	1606.2	1.3	1
12	3	1550.5	1551.0	0.7	3	20	3	1732.8	1733.0	0.3	2
12	3	1931.5	1932.2	2.0	1	20	3	1750.0	1750.5	0.5	1
12	7	1942.0		86	1	20	3	2140.5	2140.7	0.4	2
12	3	2330.2	2330.7	1.0	1	20	3	2353.2	2353.6	0.4	2
13	3	1512.5	1513.5	1.9	2	22	3	1520.0	1520.5	0.5	2
13	2	1658.9	1659.5	4.1	3	23	3	2220.6	2221.7	1.7	1
13	3	1745.0	1746.0	1.2	2	24	3	2201.1	2201.5	0.8	3
13	3	1802.5	1803.4	1.1	2	25	3	1500.5	1500.9	0.4	2
						28	3	1348.9	1349.4	0.5	2

COMMERCE - STANDARDS - BOULDER

## NOMINAL TIMES OF OBSERVATION

BOULDER

108 MC

Feb. 1961	U.T.		Feb. 1961	U.T.	
1	1415-0003		13	1402-0018	
2	1414-0004		14	1401-0018	
3	1413-0005		15	1359-0020	
4	1412-0007		16	1358-0021	
5	1411-0008		17	1357-0022	
6	1410-0010		18	1355-0023	
7	1409-2314; 2330-0010		19	1354-0024	
8	1500-1515; 1600-1630; 1645-1700;		20	1353-0025	
	1800-0011		21	1351-0027	
9	1407-0013		22	1350-0028	
10	1405-1724; 2230-0014		23	1349-0029	
11	1404-0016		24	1347-0030	
12	1403-0016		25	1346-0031	
			26	1344-0032	
			27	1343-0033	
			28	1341-0035	

COMMERCE - STANDARDS - BOULDER

**SOLAR RADIO EMISSION  
SPECTRUM OBSERVATIONS**

J U L Y 1960

Fort Davis

25-580, 2100-3900 Mc

Date 1960	Observing Hours	Type	Important Bursts Times U.T.	Int.	Frequency Range	Remarks
Jul. 1	0000-0150 1215-2400	I III G I III G	0035-0108 0100-0101 1215-2400 1523-1526	1-2 2 1-2 2	320-100 500-140 450-150 450-25	
Jul. 2	0000-0150 1215-2400	I I III G	0000-0146 1215-2400 2243-2245	2 1-2 2	400-150 320-150 320-100	
Jul. 3	0000-0150 1216-2400	III G I III G	0110-0113 1215-~1800 2037-2040	2 1-2 2	300-100 280-130 500-50	Weak I 0000-0150
Jul. 4	0000-0150 1215-2400	III G III G III G I	1607-1608 1917-1918 2100-2101 ~ 2100-~2300	2 2 2 1-2	250-50 250-50 220-60 320-150	Weak I throughout day.
Jul. 5	0000-0150 1215-2400	III G III G III G	2019-2020 2024-2026 2220-2221	2 2 3	250-75 280-60 320-70	Weak I throughout day.
Jul. 6	0000-0150 1215-2400	III G I III G	0059-0101 1215-~1330 1606-1608	2 1 1	280-110 450-180 320-180	Weak I throughout day.
Jul. 7	0000-0150 1215-2400	I	~ 1300-~1450	1-2	320-170	Weak I throughout day.
Jul. 8	0000-0150 1215-2400	III G III G II	1926-1928 1929-1934 2336.5-2348	3 1-3 2	500-25 350-25 140-40	
Jul. 9	0000-0150 1215-2400					
Jul. 10	0000-0150 1215-2313 2350-2400	III G	2237-2239		240-60	
Jul. 11	0000-0150 1215-2400					
Jul. 12	0000-0150 1215-2400					
Jul. 13	0000-0150 1215-2400					Weak I throughout day.
Jul. 14	0000-0150 1215-2400					Weak I throughout day.
Jul. 15	0000-0150 1215-2400	III G III G	0002-0003 0121-0122	2 3	350-25 580-100	Weak I throughout day.
Jul. 16	0000-0150 1230-2400					
Jul. 17	0000-0150 1253-2400					
Jul. 18	0000-0150 1230-2400					
Jul. 19	0000-0150 1230-2400	III G IV II	1818-1820 1818-1825 1821.0-1828	3+ 1-2 3	580-150 2100-3900 290-40	

COMMERCIAL STANDARDS BOULDER

**SOLAR RADIO EMISSION  
SPECTRUM OBSERVATIONS**

Fort Davis

JULY - AUGUST 1960

25-580, 2100-3900 Mc/s.

Date 1960	Observing Hours	Type	Important Bursts Times U.T.	Int.	Frequency Range	Remarks
Jul. 20	0000-0150 1230-2025 2351-2400	III G III G	1553-1554 1556-1559	1- 1	240-25 280-25	
Jul. 21	0000-0150 1230-2400	III G	1930-1932	2	240-40	
Jul. 22	0000-0150 1230-2400	III G III G	1721-1725 1908-1911	2 2	300-25 240-25	
Jul. 23	0000-0150					
Jul. 24	0145-0150 1230-2400	III G	2155-2157	1	150-25	
Jul. 25	0000-0150 1230-2400	III G	1655-1657	3	240-25	
Jul. 26	0000-0150 1230-2400	III G III G III G III G III G	1705-1708 1828-1829 1830-1833 2224-2225 2226-2230	3 3 2 2 2	580-100 280-25 240-25 240-25 320-25	
Jul. 27	0000-0150 1230-2400	Uncl.	2311-2318	1	75-50	Uncl: Resembles II
Jul. 28	0000-0150 1230-2400	III G	1731-1733	2	400-25	1731: Reverse slopes 400-200 Mc/s
Jul. 29	0000-0150 1230-2400					
Jul. 30	0000-0145 1230-2400	III G	2320-2321	2	240-100	
Jul. 31	0000-0145 1230-2400	III G III G III G III G	1650-1651 2024-2026 2320-2324 2325-2327	1 2 2 2	500-220 240-30 240-60 300-60	
Aug. 1	0000-0145 1245-2400	III G III G	1425-1428 1516-1518	1 2	220-50 300-25	
Aug. 2	0000-0140 1245-2400					
Aug. 3	0000-0140 1245-2400	III G II	1616-1618 1623.8-1633	3 2	500-25 90-30	
Aug. 4	0000-0140 1245-2341	III G	1609-1612	3	500-25	
Aug. 5	0000-0140 1245-2400	III G	0052-0054	2	350-50	2127 Reverse slopes 500-350 Mc/s Many III throughout day.
Aug. 6	0000-0140 1245-2400	III G III G III G II III G III G III G III G	0114-0116 1529-1530 1619-1625 1627-1636 1637-1638 1819-1820 1902-1904 1906-1909	2 2 3 2 2 2 3+ 3	400-260 240-25 400-25 90-30 125-25 150-25 500-25 300-25	Many III throughout day.
Aug. 7	0000-0140 1245-2400	III G III G III G III G	1735-1740 1748-1753 1755-1758 2029-2031	3 3 3 3	400-25 240-25 580-25 580-25	Weak I throughout day
Aug. 8	0000-0140 1245-2400					

**SOLAR RADIO EMISSION  
SPECTRUM OBSERVATIONS**

AUGUST 1960      25-580, 2100-3900 Mc/s.  
Fort Davis

Date 1960	Observing Hours	Type	Important Bursts Times U.T.	Int.	Frequency Range	Remarks
Aug. 9	0000-0140 1245-2400					
Aug. 10	0000-0140 1245-2400					
Aug. 11	0000-0140 1245-2400	III G III G II IV IV IV	1821-1823 1926-1930 1929.1-1938 1926-1938 2003-2019 2248-2308	3 3+ 3+ 1-2 1-2 1-2	200-25 580-25 420-25 580-150 580-150 250-150	Weak I throughout day.
Aug. 12	0000-0135 1245-2108 2113-2400	III G III G III G III G	0045-0047 1453-1455 2137-2138 2326-2330	2 2 2 2	200-25 130-25 580-150 320-60	Many III and Weak I throughout day
Aug. 13	0000-0135 1235-2400	III G III G I III G	0108-0110 0115-0120 1245-2400 1359-1401	2 3 1 2	300-100 420-25 300-50 150-25	Many III throughout day
Aug. 14	0000-0135 1235-2400	I I III G	0000-0135 1245-~2225 2040-~2056	1 1-2 1-2	300-100 300-50 150-25	Many Weak III 100-25 Mc/s throughout day
Aug. 15	0000-0130 1245-2400	I III G III G III G III G III G III G	1245-2400 1646-1649 1834-1836 1926-1930 1934-1936 2202-2007 2302-2304	1-2 2 3 2-3 2 3 2	300-50 280-25 125-25 125-25 580-25 100-25 200-25	Many III throughout day.
Aug. 16	0000-0125 1245-2400	I III G I	0000-0125 0058-0104 1245-2400	1 2 2-3	300-100 240-25 150-30	
Aug. 17	0000-0125 1245-2400	I I III G	0000-~0125 1245-~2000 2052-2055	1 1 2	150-30 240-50 240-25	
Aug. 18	0000-0125 1245-2400					Weak I throughout day.
Aug. 19	0000-0125 1245-2400	Uncl.	1245-1248	2	175-100	Uncl: End of II? Many III throughout day.
Aug. 20	0000-0125 1300-2400					
Aug. 21	0000-0125 1300-2400	I	1300-~1800	1	300-100	
Aug. 22	0000-0125 1300-2400					
Aug. 23	0000-0125 1305-2400					
Aug. 24	0000-0125 1305-2400	I	2000-2400	1-	300-200	
Aug. 25	0000-0120 1305-2400	I	1305-~1600	1	300-200	Weak I throughout day.
Aug. 26	0000-0120 1305-1637	II	1404.2-1412	2	125-50	Weak I throughout day.
Aug. 27	0040-0120 1305-2400					

**SOLAR RADIO EMISSION  
SPECTRUM OBSERVATIONS**

Fort Davis

AUGUST - SEPTEMBER 1960      25-580, 2100-3900 Mc/s.

Date 1960	Observing Hours	Type	Important Bursts Times U.T.	Int.	Frequency Range	Remarks
Aug. 28	0000-0115 1305-2400	III G III G III G III G	1500-1501 1512-1514 1555-1556 1818-1820	3 3 2 3	240-25 420-25 200-25 125-25	
Aug. 29	0000-0115 1305-2400					Weak I throughout day.
Aug. 30	0000-0115 1305-2400	III G	1906-1909	2	90-25	
Aug. 31	0000-0016 0103-0115 1300-2106 2331-2400					Weak I throughout day
Sep. 1	0000-0115 1300-2400	III G II III G III G I	1322-1325 2041.5-2045.5 2100-2102 2108-2112 ~2204-~2340	1-2 3 3+ 2 1	125-25 420-40 580-25 240-25 100-50	Many III 100-25 Mc/s after II (2120-2240)
Sep. 2	0000-0110 1305-2400	I III G III G	1305-~2325 1805-1817 2309-2313	1 2-3 1-2	280-100 100-25 280-25	
Sep. 3	0000-0110 1305-2400	IV III I	0038-0054 0103-0105 1305-1408	2 3 1	580-320 240-50 240-50	
Sep. 4	0000-0105 1305-2400	IV II III G	0006-0028 0021.2-0029 1923-1925	2 1 2	580-320 125-50 320-25	
Sep. 5	0000-0106 1305-2001 ~2038-2400	III G II	1821-1823 1942.2-1953	2 3	350-25 100-25	
Sep. 6	0000-0100 1300-1635 1637-1929 1956-2003 2005-2400	Uncl. III G	1504-1514 2225-2229	2 2	75-30 320-35	Uncl: Resembles II Weak I throughout day
Sep. 7	0000-0100 1303-2400	Uncl. III G III G	1303-1316 2310-2311 2316-2318	2 2 2	350-50 580-320 280-50	2310 Reverse slopes 580-320 Mc/s 2317 Reverse slopes 100-90 Mc/s
Sep. 8	0000-0055 1305-2400	III G II	1815.5-1817 1820.2-1826	3 3	240-30 140-35	
Sep. 9	0000-0055 1305-2400					
Sep. 10	0000-0050 1305-2400	III G	1934-1935	3	500-35	Weak I throughout day.
Sep. 11	0000-0050 1305-2400	I	1305-2400	1-2	320-75	
Sep. 12	0000-0050 1305-2400	I I III G III G III G III G III G	0000-~0040 1305-2400 1516-1520 1621-1622 1805-1813 1821-1822 2207-2211	1 1-2 3 2 2-3 3+ 1-3+	320-200 350-100 400-25 320-25 420-25 500-25 500-25	~1820-~2020 Noise storm down to 60 Mc/s.
Sep. 13	0000-0045 1305-2400	I I III G III G III G	0000-0045 1305-2400 1515-1518 2334-2337 2338-2340	1 1 2 3 3	300-100 300-100 300-25 350-40 580-50	

**SOLAR RADIO EMISSION  
SPECTRUM OBSERVATIONS**

Fort Davis

SEPTEMBER 1960

25-580, 2100-3900 Mc/s.

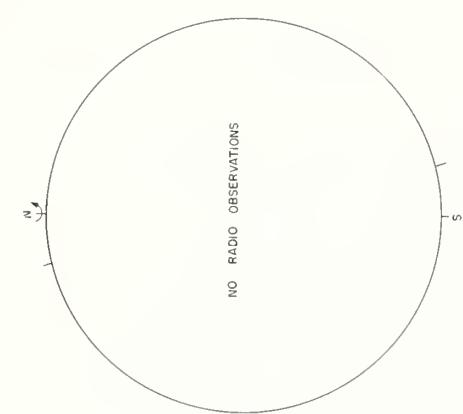
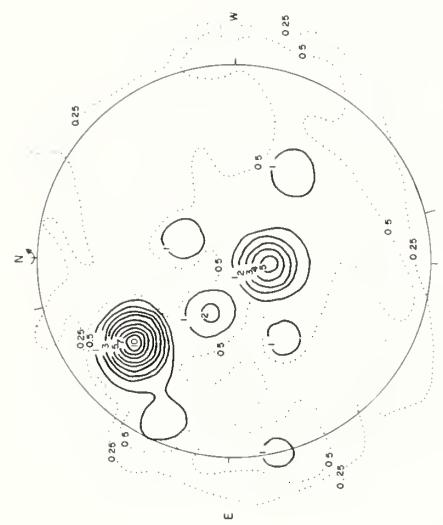
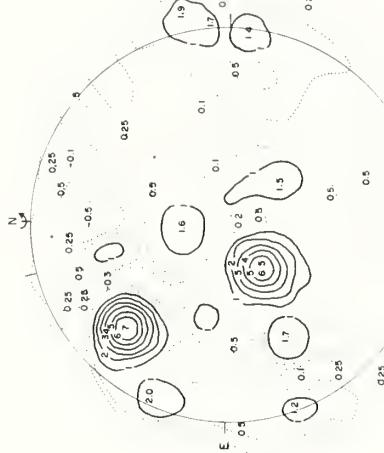
Date 1960	Observing Hours	Type	Important Bursts Times U.T.	Int.	Frequency Range	Remarks
Sep.14	0000-0040 1305-2400	I III G III G III G III G	0000-0040 1332-1333 1758-1802 2104-2110 2346-2348	1 2 2 3 2	300-75 300-50 200-25 240-25 300-50	
Sep.15	0000-0040 1305-2400	III G III G	1641-1643 1954-1956	2 3	300-50 400-25	
Sep.16	0000-0040 1320-2400	II IV	1714.0-1728 1717-1911	3 1-3+	175-25 3500-25	
Sep.17	0000-0040 1320-2400					
Sep.18	0000-0035 1320-2400	III G III G III G III G III G III G	1645-1646 1748-1750 1825-1837 1841-1842 1908-1909 1948-1950 2040-2043	2 3+ 1-3+ 3 3+ 3+ 3+	200-25 200-25 580-25 280-25 580-25 300-25 500-25	
Sep.19	0000-0035 1320-2400					Many III throughout day.
Sep.20	0000-0035 1320-2400					
Sep.21	0000-0035 1320-2400	I	1320-2400	1	350-100	~2010-~2100 Noise Storm down to 50 Mc/s.
Sep.22	0000-0035 1320-2400					Weak I most of day.
Sep.23	0000-0035 1320-2400	III G	1333-1336	2	500-75	1335: Reverse slopes 350-240 Mc/s Weak I throughout day.
Sep.24	0000-0030 1320-2400	III G	2115-2120	2	3000-25	Weak I most of day.
Sep.25	0000-0030 1320-2400	III G III G	2012-2014 2220-2222	2 1	450-100 350-180	2341-2343 Reverse slopes 250-150 Mc/s.
Sep.26	0000-0030 1320-2400	III G III G	1354-1357 1847-1852	2 2-3	420-50 350-25	
Sep.27	0000-0025 1320-2400	III G	1823-1826	2	140-30	
Sep.28	0000-0025 1320-2400	III G	2041-2043	3	320-25	
Sep.29	0000-0025 1320-2400					
Sep.30	0000-0025 1320-2400					

STANFORD

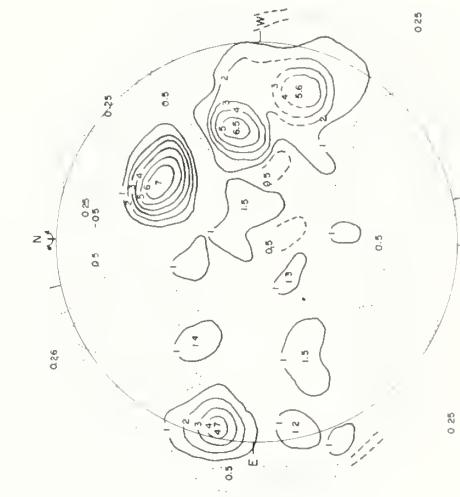
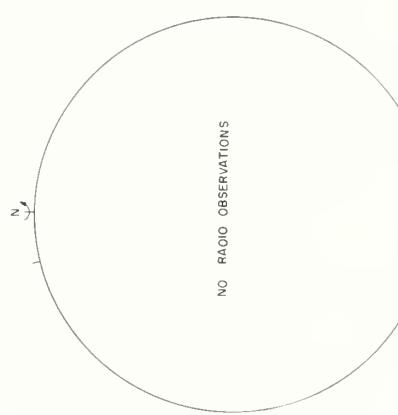
## SOLAR RADIO EMISSION SPECTROHELIOPHOTOGRAMS

JUNE 1960

9.1 cm



1960 JUNE 4<sup>d</sup> 19<sup>h</sup>20<sup>h</sup> UT  
CONTOUR BRIGHTNESS UNIT = 93,000 °K



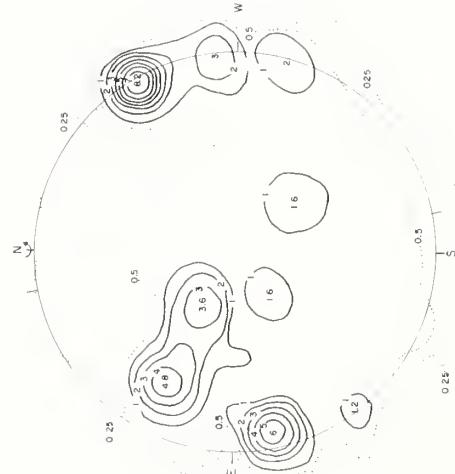
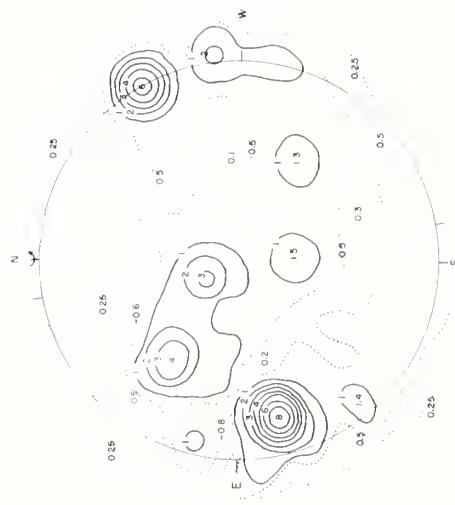
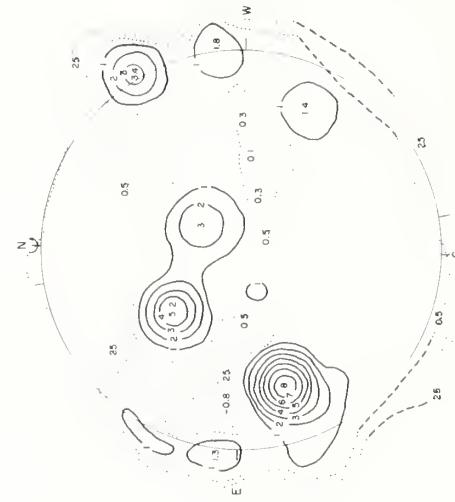
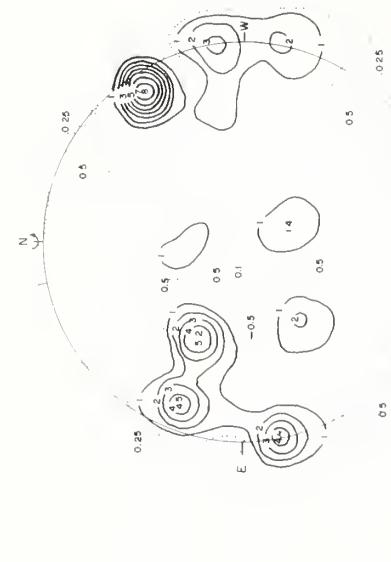
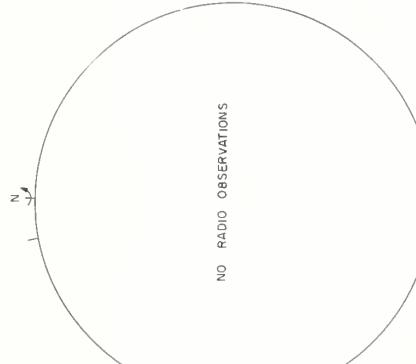
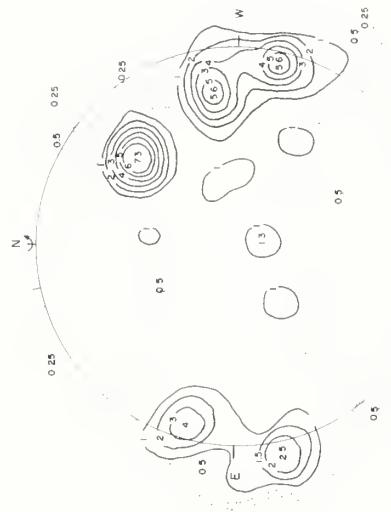
1960 JUNE 6<sup>d</sup> 19<sup>h</sup>20<sup>h</sup> UT  
CONTOUR BRIGHTNESS UNIT = 68,000 °K

## SOLAR RADIO EMISSION SPECTROHELIograms

STANFORD

JUNE 1960

9.1 cm

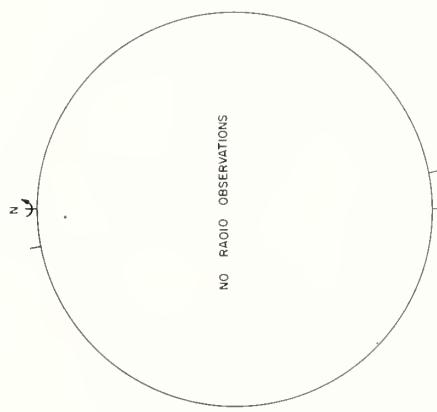


SOLAR RADIO EMISSION SPECTROHELIograms

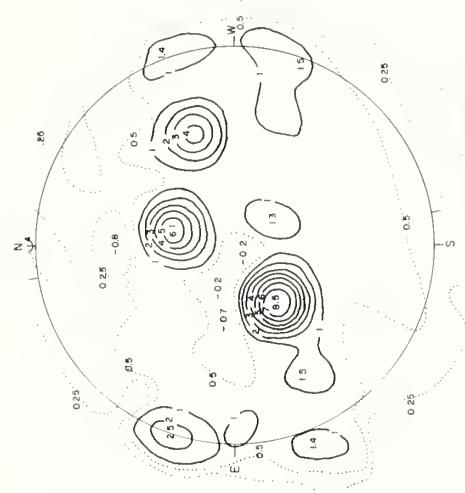
STANFORD

JUNE 1960

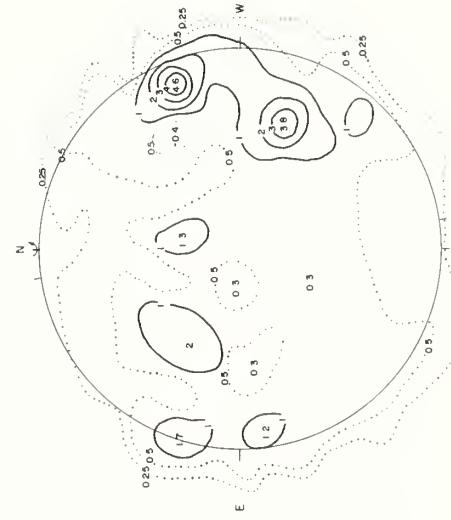
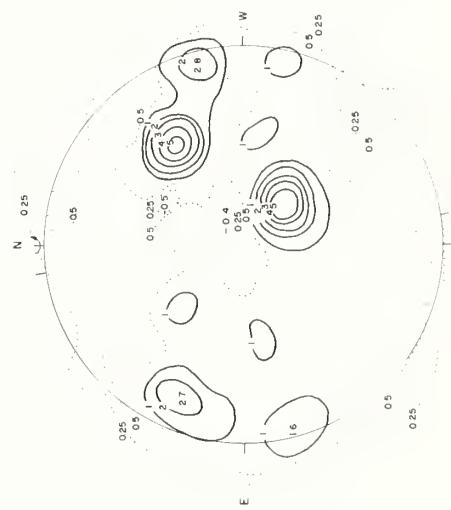
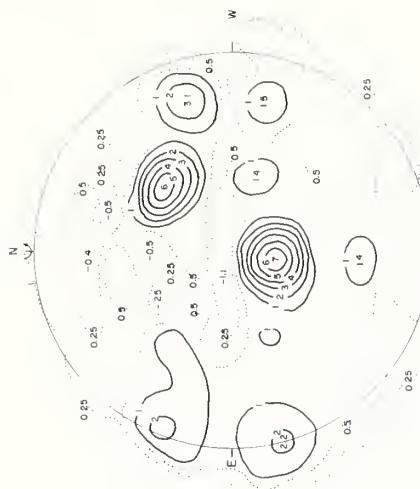
9.1 cm



1960 JUNE 13



1960 JUNE 15<sup>d</sup>, 20<sup>h</sup>-21<sup>h</sup> UT  
CONTOUR BRIGHTNESS UNIT = 75,000 °K



1960 JUNE 18<sup>d</sup>, 20<sup>h</sup>-21<sup>h</sup> UT  
CONTOUR BRIGHTNESS UNIT = 74,000 °K

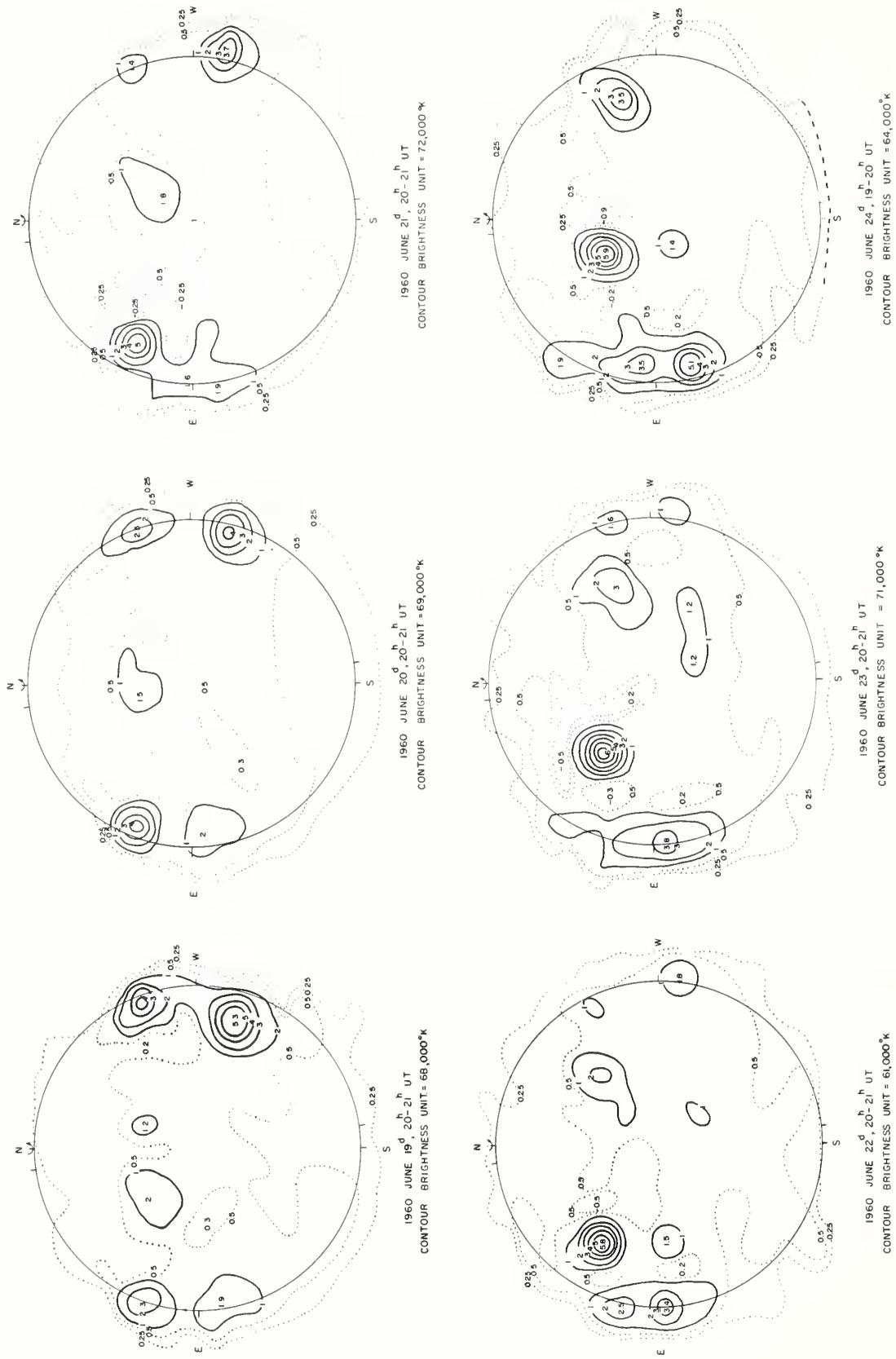
1960 JUNE 18<sup>d</sup>, 20<sup>h</sup>-21<sup>h</sup> UT  
CONTOUR BRIGHTNESS UNIT = 74,000 °K

## SOLAR RADIO EMISSION SPECTROHELIograms

JUNE 1960

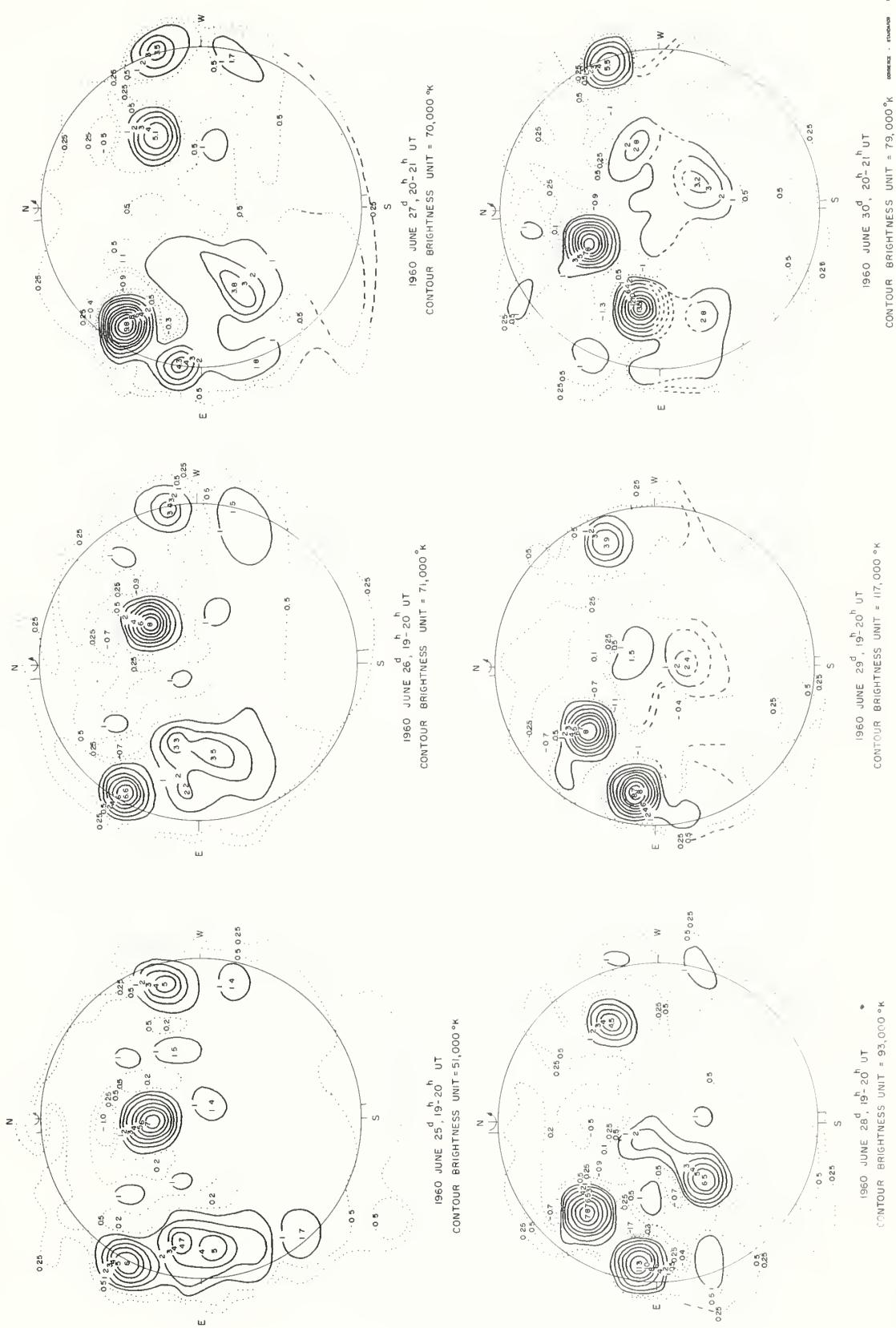
STANFORD

9.1 cm



STANFORD JUNE 1960 SOLAR RADIO EMISSION SPECTROHELIOPHOTOGRAMS

9.1 cm



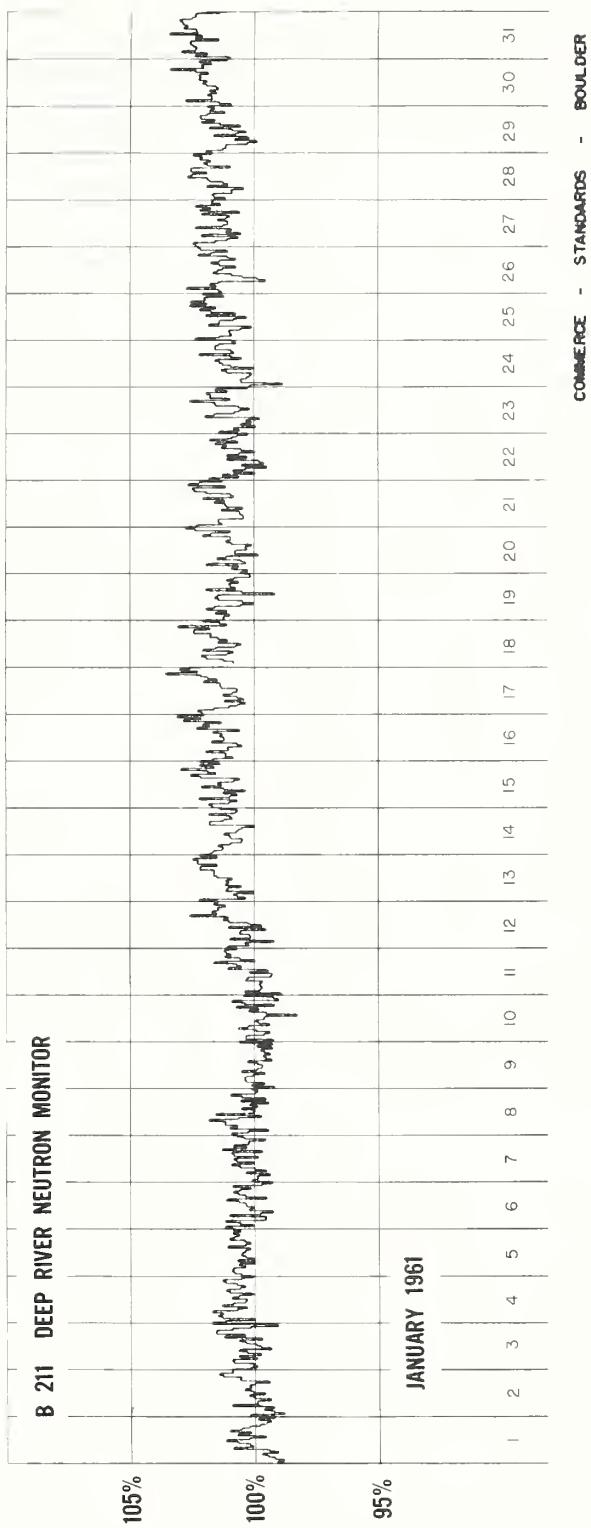
COSMIC RAY INDICES  
(Climax Neutron Monitor)

Jan. 1961	Daily average counts/hr	Jan. 1961	Daily average counts/hr
1	2911.9	17	2953.9
2	2909.4	18	2955.5
3	2917.3	19	2938.1
4	2921.0	20	2952.1
5	2922.3	21	2946.7
6	2920.0	22	2925.7
7	2912.0	*23	2933.7 (28)
8	2924.4	24	2929.0
9	2925.8	25	2960.7
10	2919.8	26	2960.5
11	2923.3	27	2961.7
12	2944.0	28	2957.7
13	2962.0	29	2948.0
14	2956.2	30	2956.8
15	2959.9	31	2970.4
16	2965.0		

\*Less than 40 section hours.

COMMERCE - STANDARDS - BOULDER

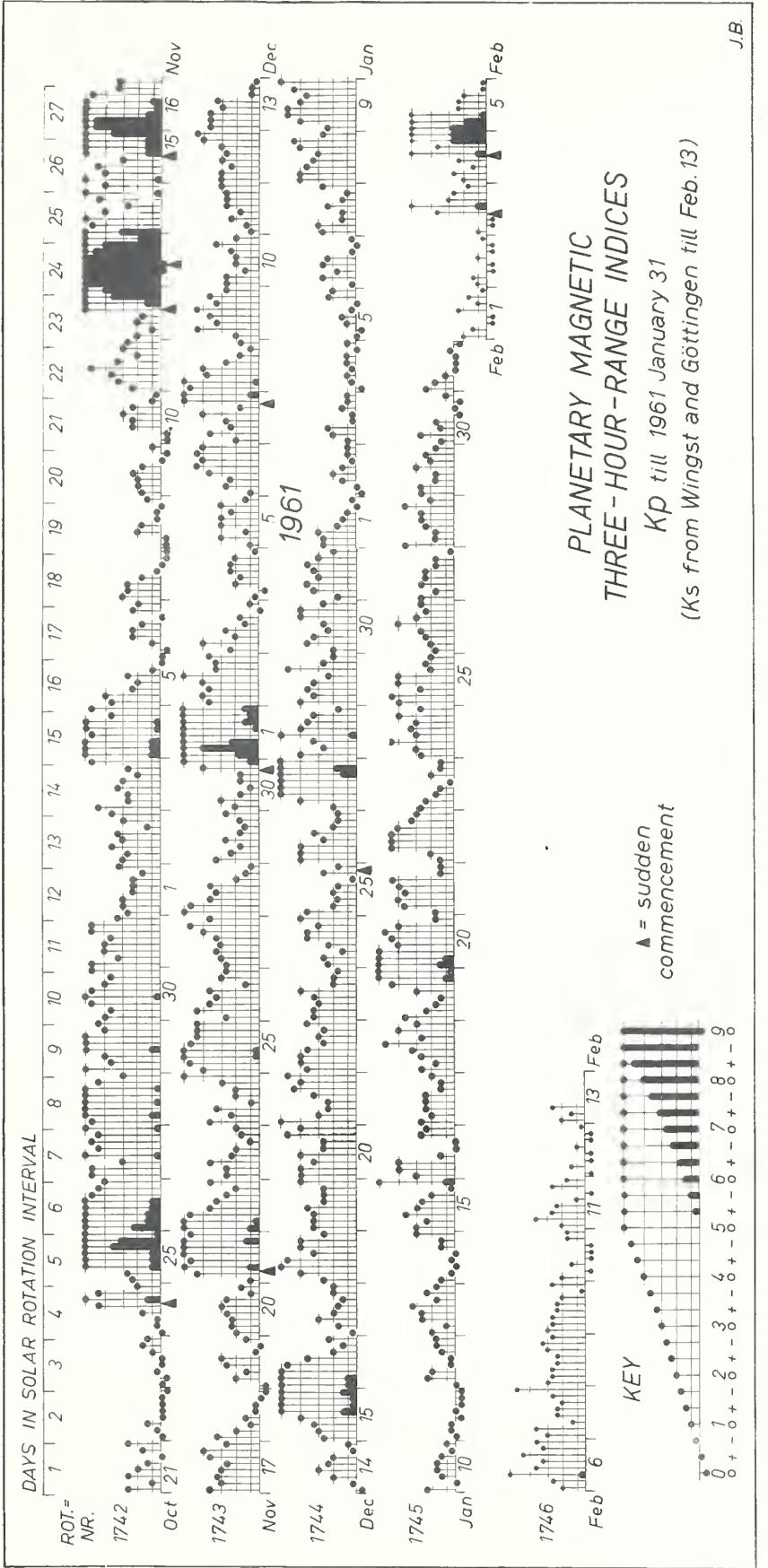
COSMIC RAY INDICES  
(Pressure Corrected Hourly Totals)



## GEOMAGNETIC ACTIVITY INDICES

JANUARY 1961

Jan. 1961	C	Values Kp								Sum	Ap	Final Selected Days
		Three hour Gr. interval										
		1	2	3	4	5	6	7	8			
1	0.2	3-	3-	3o	2-	1+	1o	0+	1-	13+	7	Five Quiet
2	0.1	0o	0+	1+	2o	1+	1-	1o	1o	8-	4	
3	0.1	1o	2o	2+	1-	1-	1+	1o	1o	10o	5	
4	0.1	0o	1-	1o	1-	1o	1o	0+	1o	6-	3	
5	0.2	0+	0o	1o	1+	1-	0+	2+	2o	8o	4	
												5
6	0.2	1-	3-	2-	3-	2+	1-	0+	1-	12-	6	11
7	0.5	3-	3o	1+	1+	2+	1+	1o	3-	16-	8	31
8	1.2	4o	4o	4-	3+	3o	4o	4+	3-	29o	22	
9	1.2	2+	4o	5-	5-	4o	4-	4+	5o	33-	30	
10	0.1	2+	0+	1+	2-	2-	1+	1-	1o	10+	5	
11	0.0	0+	1-	1-	0o	0+	0o	0o	0o	2o	1	Five Disturbed
12	0.2	0+	2+	2o	1-	1-	1+	2-	2-	11-	5	
13	0.4	2o	1o	3-	3-	3+	2-	2+	2-	17+	9	
14	0.2	1+	1-	0+	1-	0+	1+	1+	3o	9o	5	
15	1.1	3o	2+	4-	3o	3-	2o	1-	6-	23o	19	
												19
16	0.7	3o	4o	4o	1+	0+	0+	3-	2+	18o	12	20
17	0.4	3-	2o	2+	2+	2+	1+	1+	2o	16+	8	22
18	1.0	3-	2-	3-	3-	5-	3-	4-	3o	24+	17	
19	1.3	4-	2+	2-	1+	3o	4+	6-	5+	27+	26	
20	1.4	6o	6-	5o	4o	4+	5-	4o	2-	35+	41	
21	0.9	2-	4-	4o	4-	4o	4+	1+	1+	24o	18	Ten Quiet
22	1.0	1+	2o	4+	4+	4+	4o	3+	3o	27-	21	
23	0.3	3-	2+	2-	1+	1-	2o	1+	1+	13+	6	
24	1.1	3-	3o	4+	3o	3+	3o	4o	3-	26o	18	
25	0.8	4o	4+	3-	4o	4o	2o	2+	2o	25+	18	
												4
26	0.8	2-	2o	2+	3-	4o	3o	2+	3-	21-	12	5
27	0.3	3-	2-	3-	2+	2+	2-	2-	1-	16-	8	10
28	0.8	4-	2-	2-	2+	3-	3-	4-	2o	20+	12	11
29	0.5	3-	3-	2-	2-	3o	2o	2+	2-	18-	9	12
30	0.1	1+	3-	1+	2-	0o	0+	0o	1o	8+	4	14
31	0.0	2+	2-	1o	0+	0+	0+	1-	0o	7-	4	30
												31
Mean:		0.55									Mean:	12

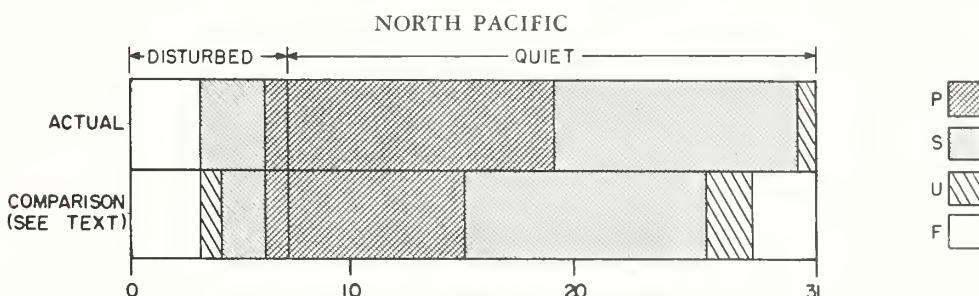
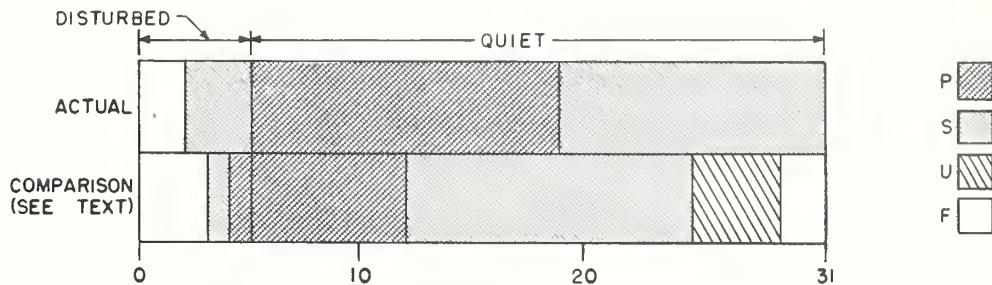
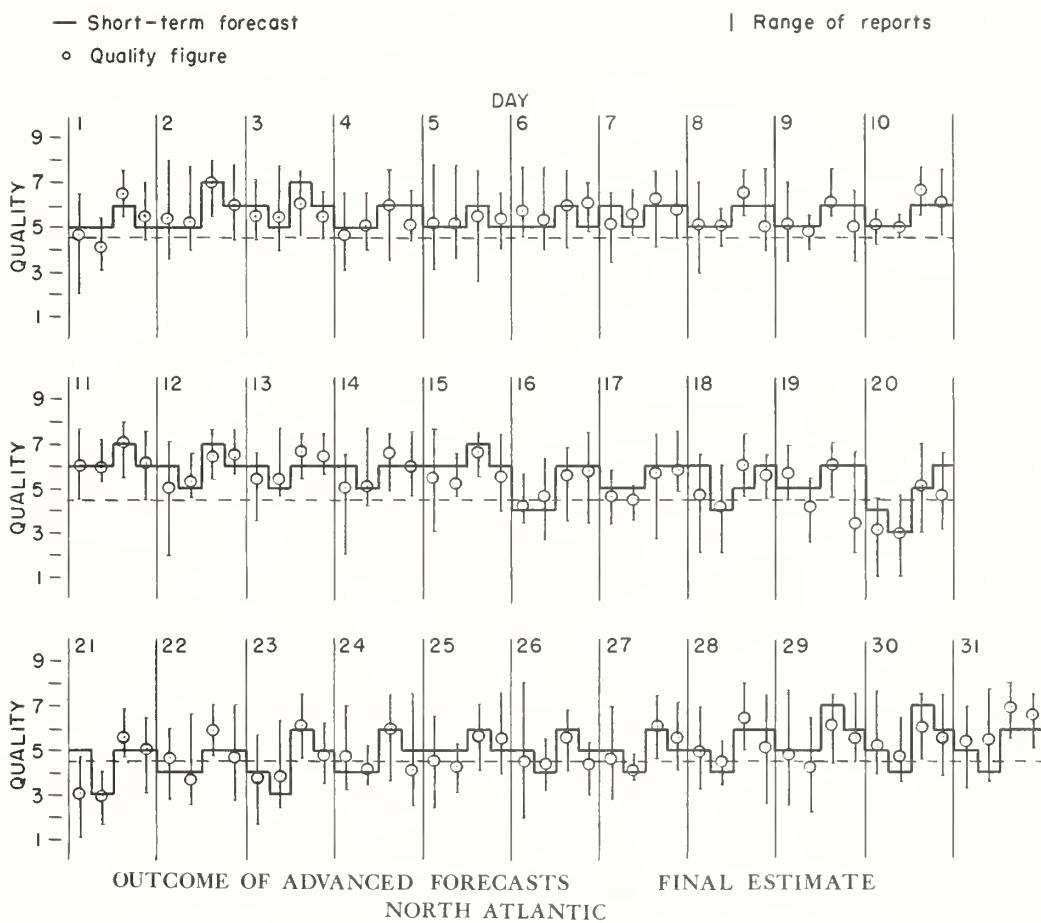


CIRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS  
NORTH ATLANTIC JANUARY 1961 NORTH PACIFIC

) Represent disturbed values

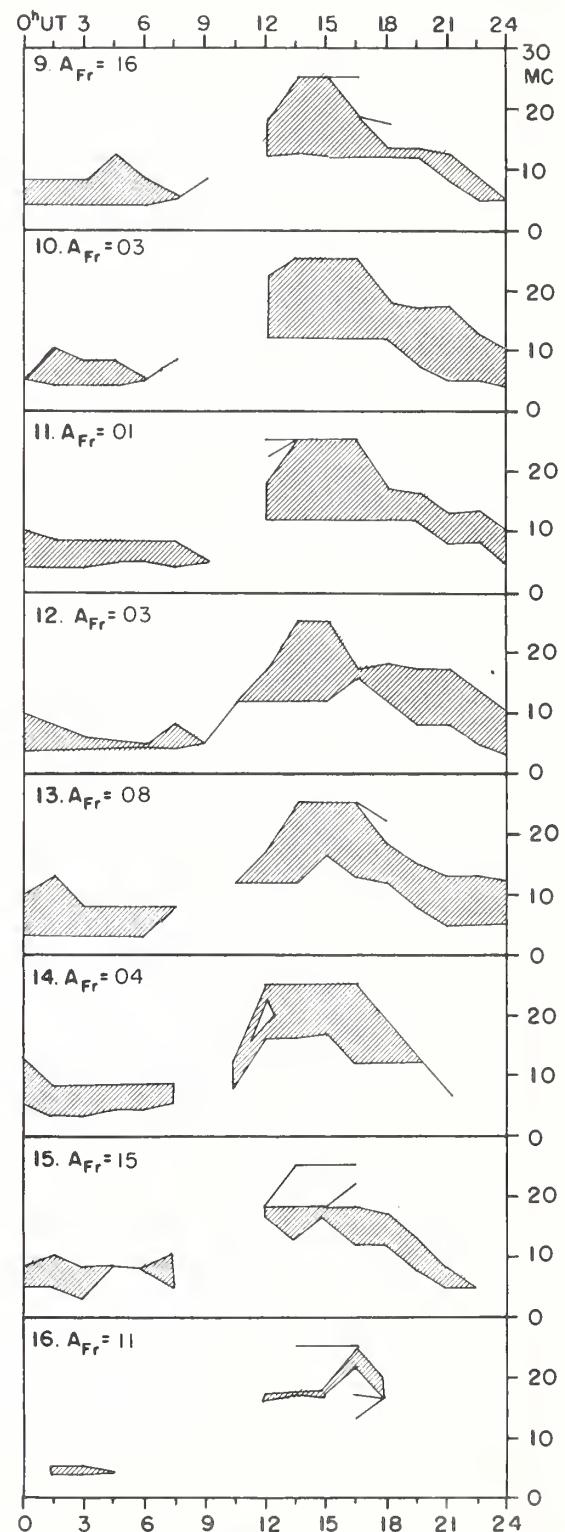
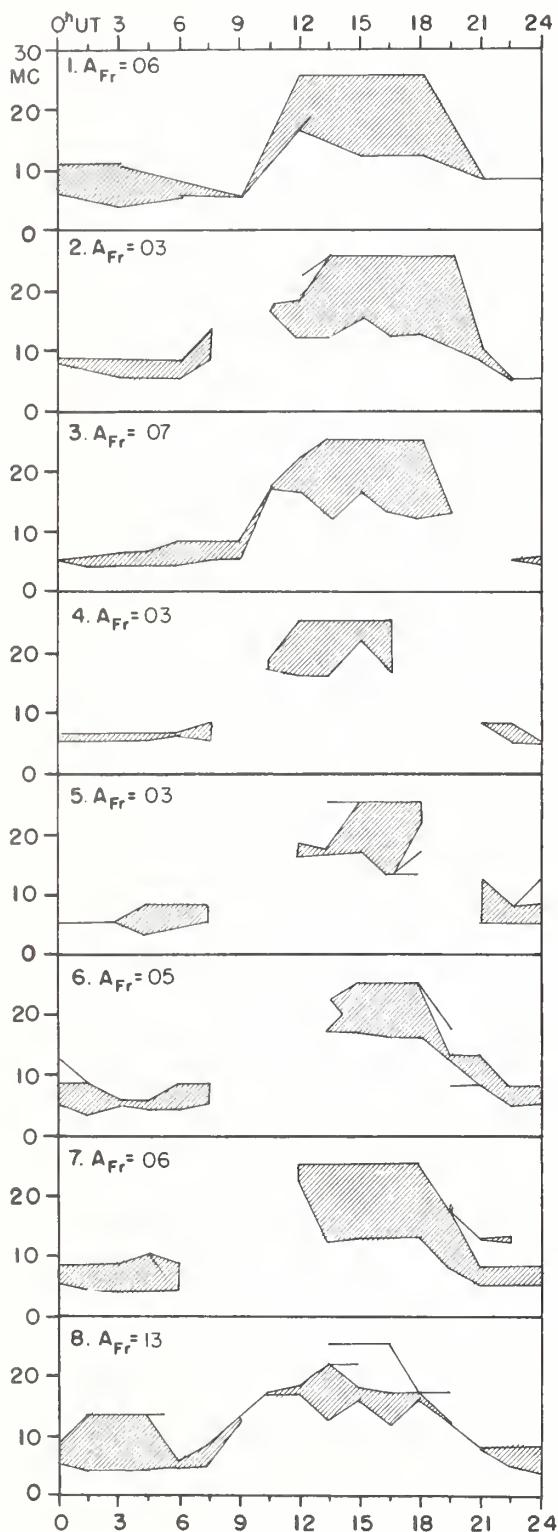
## NORTH ATLANTIC

JANUARY 1961

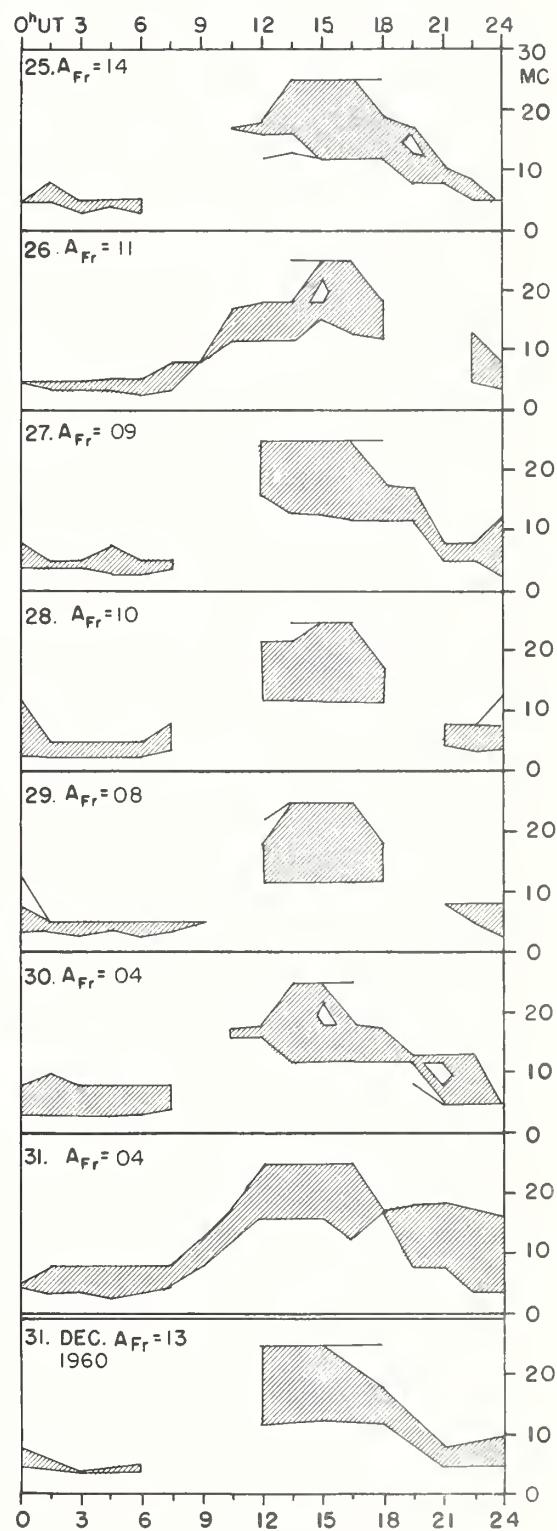
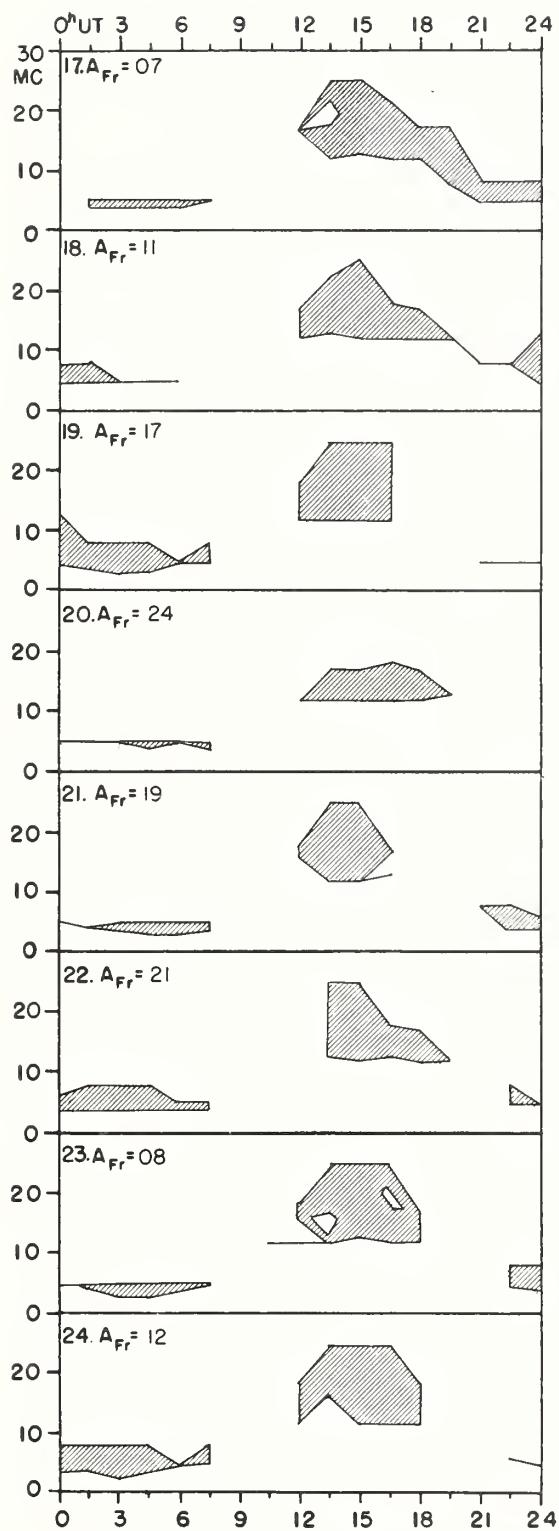


## USEFUL FREQUENCY RANGES -- NORTH ATLANTIC PATH

JANUARY 1961



JANUARY 1961



## ALERT PERIODS AND SPECIAL WORLD INTERVALS

INTERNATIONAL WORLD DAY SERVICE

FEBRUARY 1961

Issued Day/Time UT Feb. 1961	Advance Geophysical Alert	No.	World-Wide Geophysical Alert	Special World Interval
4/1600		108	Magnetic Storm 04/1330Z	
16/1600		109	Magnetic Storm 16/0044Z	

COMMERCE - STANDARDS - BOULDER



